



AIR FORCE NUCLEAR ENTERPRISE ORGANIZATION: A CASE STUDY

Graduate Research Paper

Jeffery M. Blackrick, Major, USAF

AFIT-ENS-MS-16-S-027

**DEPARTMENT OF THE AIR FORCE
AIR UNIVERSITY**

AIR FORCE INSTITUTE OF TECHNOLOGY

Wright-Patterson Air Force Base, Ohio

DISTRIBUTION STATEMENT A.
APPROVED FOR PUBLIC RELEASE; DISTRIBUTION IS UNLIMITED.

The views expressed in this thesis are those of the author and do not reflect the official policy or position of the United States Air Force, Department of Defense, or the United States Government. This material is declared a work of the U.S. Government and is not subject to copyright protection in the United States.

AIR FORCE NUCLEAR ENTERPRISE ORGANIZATION: A CASE STUDY

Graduate Research Paper

Presented to the Faculty

Department of Operational Sciences

Graduate School of Engineering and Management

Air Force Institute of Technology

Air University

Air Education and Training Command

In Partial Fulfillment of the Requirements for the
Degree of Master of Science in Operations Management

Jeffery M. Blackrick, BS, MS

Major, USAF

September 2016

DISTRIBUTION STATEMENT A.
APPROVED FOR PUBLIC RELEASE; DISTRIBUTION IS UNLIMITED.

AIR FORCE NUCLEAR ENTERPRISE ORGANIZATION: A CASE STUDY

Jeffery M. Blackrick, BS, MS

Major, USAF

Committee Membership:

Matthew A. Douglas, Lt Col, USAF
Chairman

Russel B. McMahon, Ph.D., AFRI/RIR
Member

Abstract

Significant organizational changes have recently occurred in the Air Force to bolster the Air Force Nuclear Enterprise (AFNE). Such changes include the standup of AFGSC, the HAF/A10 Directorate, and the re-organization of AFNWC. However, General Welsh (CSAF), Eric Fanning (2013 acting SECAF) and Chuck Hagel (2014 SECDEF) continued to demand further organizational changes. The problem is that the AFNE has not been characterized in terms of an organizational structure. Viewing the enterprise organizationally allows the application of organizational theory and commercial business models to effectively evaluate the enterprise and advocate for appropriate changes to improve the AFNE's performance. Literature review provides valuable insight into the organizational design parameters that shape organizational structures. To characterize the AFNE, senior leaders across NAFs, MAJCOMs and HAF were asked to complete a survey regarding design parameters as they pertain to the current and future AFNE. Results and case study data were analyzed, represented statistically, modeled, and compared with commercial business models. This study highlighted, that although much has been done to improve how the AFNE organizationally functions, the complexity of the AFNE due to its conglomeration of organizations, missions, authorities, and structures make effective comparison difficult. However, opportunities still exist for future meaningful changes.

To my incredibly supportive wife and my wild and crazy kids. Thank you for supporting me through this program and allowing me the time to complete this project.

Acknowledgments

I would like to express my sincere appreciation to my faculty advisor, Lt Col Matthew Douglas, for his guidance and support throughout the course of this graduate research paper effort. His experience and feedback was crucial to the success of this paper. I would also like to thank Blake McMahon, from the Air Force Research Institute for taking time to support me and participate in this research paper's committee.

Jeffery M. Blackrick

Table of Contents

	Page
Table of Contents	vii
List of Figures	x
List of Tables	xii
I. Introduction	1
Background	1
Problem Statement	4
Research Objectives and Investigative Questions	4
Research Focus.....	5
Methodology	6
Assumptions	6
Limitations	7
Implications.....	8
Summary	8
II. Literature Review	10
Chapter Overview	10
Organizational Design.....	10
<i>Overview.....</i>	<i>10</i>
<i>Operating Core</i>	<i>12</i>
<i>Middle Line</i>	<i>13</i>
<i>Strategic Apex</i>	<i>14</i>
<i>Support Staff.....</i>	<i>15</i>
<i>Technostructure.....</i>	<i>15</i>
Organizational Design Parameters	16
<i>Overview.....</i>	<i>16</i>
<i>Division of Labor</i>	<i>17</i>
<i>Formalization.....</i>	<i>19</i>
<i>Training.....</i>	<i>20</i>
<i>Unit Grouping</i>	<i>20</i>
<i>Unit Size</i>	<i>21</i>
<i>Span of Control</i>	<i>22</i>
<i>Delegation</i>	<i>23</i>
<i>Liaison Devices</i>	<i>24</i>
<i>Variables</i>	<i>25</i>
System Workflow and Coordination.....	27
<i>Overview.....</i>	<i>27</i>

<i>Informal Flow and Coordination</i>	28
<i>Workflow and Coordination Derived from Authority</i>	29
<i>Workflow and Standardization</i>	31
<i>Constellations</i>	33
Commercial and Industrial Organizational Structures	35
<i>Overview</i>	35
<i>Two Extremes</i>	36
<i>Simple Structure</i>	38
<i>Functional Structure</i>	39
<i>Divisional Structure</i>	42
<i>Bureaucratic Structure</i>	44
<i>Matrix Structure</i>	47
<i>Process-Based Structure</i>	49
<i>Holacractic Structure</i>	52
Summary	55
III. Methodology	57
Chapter Overview	57
Case Study Overview	57
Research Design	58
<i>Qualitative Research</i>	59
<i>Case Study</i>	60
<i>Data Collection</i>	61
<i>Data Analysis</i>	62
Survey Development	62
<i>Design</i>	63
<i>Theoretical Models</i>	63
<i>Participant Selection</i>	66
<i>Pre-test</i>	67
<i>Institutional Approval</i>	67
Summary	68
IV. Analysis and Results	69
Chapter Overview	69
Data Collection and Analysis	69
Results	71
<i>Investigative Question 1</i>	71
<i>Investigative Question 2</i>	73
<i>Investigative Question 3</i>	75
<i>Investigative Question 4</i>	92
<i>Investigative Question 5</i>	96
Summary	98

V. Conclusions and Recommendations	99
Conclusions	99
Recommendations	104
<i>Status Quo</i>	104
<i>Short-Term Recommendations</i>	105
<i>Recommendation Requiring Future Research</i>	108
Summary	111
Appendix A. IRB Approval Letter.....	112
Appendix B. Air Force Nuclear Enterprise Organization Evaluation	113
Appendix C. Graduate Research Project Storyboard.....	121
Bibliography	122
Vita.....	127

List of Figures

	Page
Figure 1. Organizational Design Elements	11
Figure 2. Macro and Micro Applicability of Mintzberg's Model	12
Figure 3. Design Parameters of Organization Structures.....	17
Figure 4. Relationship Between Independent and Dependent Variables.....	27
Figure 5. Representation of Organizational Workflow and Coordination.....	28
Figure 6. Illustration of Air Force Publication Chain Applied to a Missile Wing.....	31
Figure 7. Air Force Organization Down to Numbered Air Force Level	34
Figure 8. Organizational Structure Continuum.....	37
Figure 9. Notional Simple Structure	38
Figure 10. Notional Functional Structure	41
Figure 11. Notional Divisional Structure.....	43
Figure 12. Classic Bureaucratic Structure	46
Figure 13. Notional Matrix Structure.....	48
Figure 14. Notional Process-Based Structure	51
Figure 15. Notional Holacratic Structure.....	54
Figure 16. Theoretical Organizational Model.....	65
Figure 17. Organizational Framework Generator Snapshot	66
Figure 18. Air Force Nuclear Enterprise Organizational Structure	72
Figure 19. Organizational Characteristics.....	74
Figure 20. Formalization Part 1 Survey Results	76
Figure 21. Formalization Part 2 Survey Results	77

Figure 22. Division of Labor Part 1 Survey Results	79
Figure 23. Division of Labor Part 2 Survey Results	81
Figure 24. Span of Control Survey Results	82
Figure 25. Liaison Usage Survey Results	84
Figure 26. Centralization Survey Results	86
Figure 27. Training Part 1 Survey Results	88
Figure 28. Training Part 2 Survey Results	89
Figure 29. Grouping Survey Results	90
Figure 30. Current Air Force Nuclear Enterprise Organizational Framework	93
Figure 31. Organizational Framework for the Air Force Nuclear Enterprise Way-Ahead	94
Figure 32. Theoretical Commercial/Industrial Organizational Frameworks	95
Figure 33. Taking Necessary Steps Toward End Result	102

List of Tables

	Page
Table 1. Organizational Framework Comparison.....	97

AIR FORCE NUCLEAR ENTERPRISE ORGANIZATION: A CASE STUDY

I. Introduction

The Air Force Nuclear Enterprise (AFNE) can draw on pertinent commercial or industrial business models to serve as a framework for organizational change. The Air Force in the past decade has frequently enacted organizational changes to increase the effectiveness of the AFNE. An AFNE case study will enable a comparison of various business models to determine if one model or a combination of models would benefit the AFNE. Senior leader input pertaining to organizational design parameters served as the foundation for model comparison. From the analysis of commercial and industrial business models in conjunction with case study research, this paper will serve as a framework for making organizational changes within the AFNE.

Background

The United States' nuclear enterprise spans multiple agencies, to include the Department of Defense (DoD), Department of Energy (DoE), Defense Threat Reduction Agency (DTRA) and the National Security Administration (NSA). Within the DoD, the United States Air Force is charged with the responsibility of sustaining operations for two of the three legs comprising the nuclear triad. The Air Force Blue Ribbon Review defined the nuclear enterprise as a spectrum of nuclear weapons management responsibilities for intercontinental ballistic missiles (ICBM) and aircraft (Peyer 2008). However, in 2014 the Independent Review of the Department of Defense Nuclear Enterprise:

“Did not find a coherent, integrated structure and synchronized set of activities that could be characterized as a DOD “nuclear enterprise.” Instead, the Review found a loose federation of separate nuclear activities often imbedded in and indistinguishable from support for and execution of a wide range of non-nuclear activities” (Welch 2014).

For the purpose of this study and its attempt to begin characterizing the nuclear enterprise as a formal organization, the conglomerate of Air Force organizations that play a role in acquiring, sustaining, supporting or operating nuclear weapons, weapon systems or components, form an organizational structure referred to as the AFNE. Many reviews conducted on the nuclear enterprise (e.g. Schlesinger Report, Blue Ribbon Review Report, etc.) have resulted in some organizational changes for the Air Force. Most notably, Air Force Global Strike Command (AFGSC) was stood up, Air Force Nuclear Weapons Center (AFNWC) was expanded and reorganized, and Headquarters Air Force (HAF)/A10 Directorate was created.

These organizations were given the responsibility to tackle key issues for the Secretary of Defense (SECDEF) such as inefficiency within the nuclear enterprise. The Independent Review of the Department of Defense Nuclear Enterprise highlighted several problems affecting efficiency. Although uniformed members strive for mission accomplishment, problems with manning, training, micromanagement (stemming from zero-mistake or zero-risk demands from leadership), excessive security demands, and extraneous non-essential requirements were fostering inefficiencies. Other issues such as the normalization of logistics and acquisition systems designed to efficiently manage unique needs of the nuclear forces have also led to massive inefficiency (Welch, 2014).

In 2013, acting Secretary of the Air Force (SECAF) Eric K. Fanning, and Chief of Staff of the Air Force (CSAF) General Mark A. Welsh III issued guidance that stressed the importance of changing organizations and processes in a manner consistent with evolving missions in order to improve the effectiveness of the AFNE. Included in this guidance was direction to “better organizationally align the Nuclear Enterprise for future success” (Fanning 2013). Furthering the call for organizational changes and a commitment to meaningful changes, then Secretary of Defense Chuck Hagel, in a 2014 speech on nuclear enterprise reviews and reforms, shared his concerns for the consistent lack of support for the nuclear enterprise and persistent problems that included organizational deficiencies. Secretary Hagel used this speech to announce changes and initiatives geared towards resolving these deficiencies. Two very important announcements included the decision to give more authority to AFGSC by making the command a four-star command, and the establishment of the Nuclear Deterrent Enterprise Review Group (NDERG) designed to bring senior leaders together to monitor the health of the enterprise, develop recommendations for improvements, and to implement approved recommendations (Hagel 2014).

Although governmental agencies are often bureaucratic, when seeking organizational changes, the Air Force could consider organizational constructs of commercial and industrial businesses. Differing organizational constructs allow a business to operate in a manner to achieve their goals and desired effects. For example, a business with a classical hierarchal structure typically operates rather efficiently, but does not easily allow for innovative thinking. However, as organizations flatten out, the opportunities for innovative thinking increase (Daft 2013, Mintzberg 1979). With

today's constantly changing economy, business environments, market needs, and technological advancements, many companies have to relook at their organization and processes for improvements in order to grow or even survive (Hernaus 2008). A major advantage of looking at the commercial and industrial sectors lies in the fact that many business models have been tested and refined over the years in order to achieve maximum efficiency (Taylor 2011). With the government being what Mintzberg calls a "machine bureaucracy," it may be difficult to devote the time and energy necessary to test various models, not to mention the difficulty with interrupting machine-like routines in order to conduct such tests.

Problem Statement

The AFNE has not been characterized in terms of an organizational structure. Representing the enterprise as an organization will allow the application of organizational theory and current commercial or industrial business models to effectively evaluate the enterprise and advocate for appropriate changes that will improve the performance of the AFNE. Based on analysis of commercial and industrial business models, what organizational structure, or combination of structures can be recommended to improve the effectiveness of the AFNE?

Research Objectives and Investigative Questions

The objective of this research is to assess the applicability of varying organizational structures most likely to be utilized by the commercial and industrial sector to the AFNE. To accomplish this, an evaluation of several organizational structures is required. Understanding the organizational structures and the decisions

made to incorporate a particular construct requires an overview of organizational theory and design. Based on the understanding of theory and design, initial characterization of the current AFNE can begin. Finally, given senior leader perspective on the AFNE as an organization and considering their recommendations, this study will provide a framework to guide senior leaders in making decisions pertaining to organizational changes. To address the objectives of this study, five investigative questions (IQ) are posed:

IQ1. What constitutes the Air Force Nuclear Enterprise?

IQ2. What are the characteristics of commercial/industrial organizational structures?

IQ3. How homogeneous are the perspectives of Air Force senior leaders, with regards to organizational design parameters of the AFNE?

IQ4. How effectively can commercial/industrial organizations and the AFNE organization be compared, with regard to design parameters?

IQ5. Which organizational structures provides the best opportunity to improve the effectiveness of the AFNE?

Research Focus

There are a vast number of organizations involved with the United States' nuclear enterprise. They span multiple governmental departments and agencies resulting in a scope too large for this research paper. This research primarily analyzes organizational structures with regard to their applicability to just the AFNE. The impetus for this research is based on findings from the DoD's internal review of the nuclear enterprise. The review noted department level deficiencies by highlighting a lack of integration within the nuclear enterprise and identifying a lack of awareness and focus on nuclear related issues at the operational level (Creedon 2015). This research will not provide an

analysis of all variations of organizational structures, but rather it will focus on structures most likely to be used by businesses today. Recommendations provided in this study are not intended to be a detailed plan for organizational change, but are provided as examples of organizational changes which could be considered in order to move the AFNE in a direction consistent with an organization structure that meets the needs or desires of senior leaders.

Methodology

This research is supported by two primary methods: 1) Qualitative research; and 2) Qualitative analysis. Qualitative research will be conducted to develop an understanding of the AFNE as it relates to organizational theory and design. The primary mechanism for this qualitative research will be research via case study of the AFNE. The case study will be comprised of two main parts: 1) defining the AFNE as an organization through use of data obtained via sources such as observations, regulatory documents, and other similar sources; and 2) characterizing the AFNE organizational design parameters through use of survey research. Emphasis of the research will be placed on backgrounds, design parameters and the organizational structure. Qualitative analysis will be used to analyze survey results and additional case study data. Case study data will also be represented graphically as a means of comparison with organizational models discussed in Chapter 2.

Assumptions

As with most research projects, certain assumptions must be made. The most fundamental assumption being made is that the methodology for this study will provide

meaningful insight into the makeup of the AFNE. Qualitative research will provide an opportunity to obtain valuable perspectives from numerous senior leaders within the AFNE. It is assumed that this research will add to this study and be useful in the attempt to provide recommendations.

A second assumption pertains to the consistency of research. Surveys will be sent to a limited number of senior leaders within the AFNE. Based on participant's experience in the AFNE, current force improvement initiatives, and existing regulatory documents, it is assumed that the responses pertaining to the current state of the AFNE, as well as the way-ahead for the AFNE will be fairly consistent among the senior leaders. Consistency of survey responses will be a key player given the methodology chosen for this study.

Limitations

This study will remain within the boundaries of two limitations. The first limitation resides with the chain of command. This study will not focus on the nuclear warfighting chain of command, but will remain focused on the structure charged with day-to-day operations. Chapter 4 will begin to construct a basic organizational structure for the AFNE; however, the illustration will not include linkages to combatant commands, nuclear warfighting agencies or control authorities [i.e. Administrative Control (ADCON), Operational Control (OPCON), and Tactical Control (TACON)].

The second limitation placed on this study is the decision not to focus on the feasibility of any recommended organizational changes. This study provides a framework from which senior leaders could base their organizational decisions. This

study does not address the logistical requirements necessary to execute strategic-level changes. As such, this study may provide an opportunity for future research based on qualitative analysis and case study research of the AFNE, in order to determine financial, manpower, and other implications associated with organizational change recommendations.

Implications

This research will open discussions on the correlation between organizational change and the need to change based on external factor influence and decisions made with regard to organizational design parameters. By taking the design parameters, external influences and the advantages or disadvantages of various organizational structures into consideration, the Air Force can evaluate its organizational structure and determine the effectiveness of its design to achieve goals and objectives of the AFNE. This study provides a framework for senior leaders to make necessary organizational structure decisions. Recommendations provided in this study will need additional research to analyze financial, manning and other logistical advantages or disadvantages associated with change recommendations.

Summary

DoD leadership has voiced the need to fix organizational deficiencies and restore lost focus on important issues within the Nuclear Enterprise. Additionally, current fiscally constrained environments and the reduction in manpower are leading the charge in necessitating the need for organizational changes. Business models utilized in the commercial and industrial sectors provide an excellent framework from which to base

AFNE organizational change decisions. Existing literature provides an overview of organizational theory, design and external factor influences that must be considered during decision-making processes when determining the best construct(s) to adopt. The AFNE is studied through case study research garnering senior leader input from which the current and future AFNE organizational structure will be characterized. Survey results and other case study data will be analyzed and used to answer this paper's investigative questions. Finally, conclusions from this study and any recommendations for organizational changes or future research will be presented.

II. Literature Review

Chapter Overview

The fundamental aspect of organizational design is the manner in which leaders or senior management not only integrates operations and differentiates functional or departmental units related to operations, but also prescribes them in the most effective combination to respond to the needs of the organization and its external environment (Business Dictionary 2015). Organizational structures will be developed based on decisions made with regards to design. The core of an organization is the people and how they interact with each other (Daft 2013). This chapter establishes a basic foundation of organizational design, design parameters and contingency factors that affect organizational design. Additionally, several organizational constructs will be identified based on current commercial and/or industrial business models. Finally, an analysis of the identified organizational structures will be discussed.

Organizational Design

Overview

All organizations are designed to fulfill a specific purpose; however, each organization is comprised of the same design elements. Personnel employed by the organization will then fall into one or more of these elements, as well as a more defined position in the resultant organization structure. In a very small organization, one person may fill roles commensurate with multiple design elements. Henry Mintzberg, in his book, *The Structuring of Organizations*, begins by providing a basic illustration of the design elements upon which all other aspects of an organization will hinge (Mintzberg

1979). Figure 1 provides a graphical representation of the five major design elements of an organization.

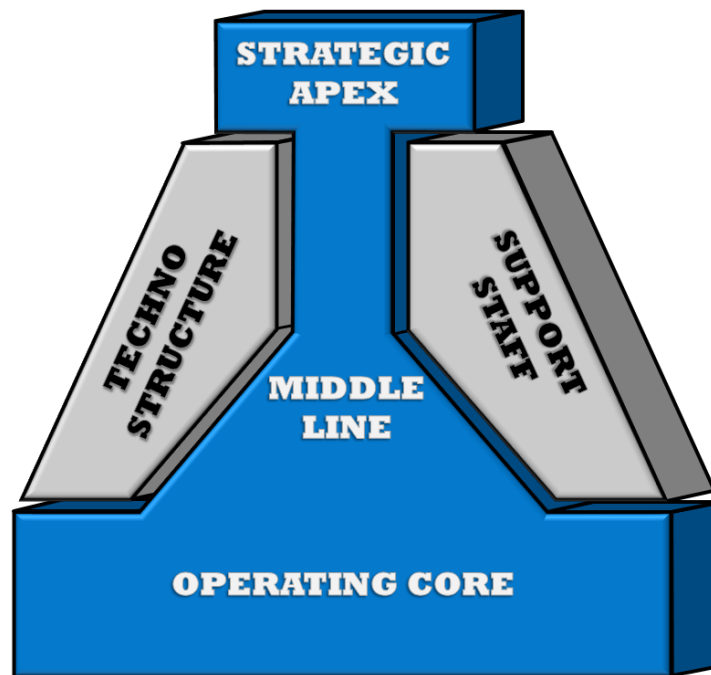


Figure 1. Organizational Design Elements

Although the design elements are depicted in a rather simplistic manner, they represent the fundamental core of any organization. Mintzberg's model is applicable to any size organization. As discussed in chapter one, the AFNE, as a subset of the United States Air Force, consists of a wide variety of organizations. The organizations are as small as the School of Advanced Nuclear Deterrence Studies (SANDS) detachment to Wings and Major Commands (MAJCOM) with thousands of personnel. Each organization within the AFNE has a specific organizational structure to accomplish its mission; however, they all share the same organizational design elements (Jones 2011, Donley 2011). Figure 2 provides an illustration (non-inclusive representation) of how the

same organizational design model applies to an enterprise and to a smaller individual organization within the enterprise.

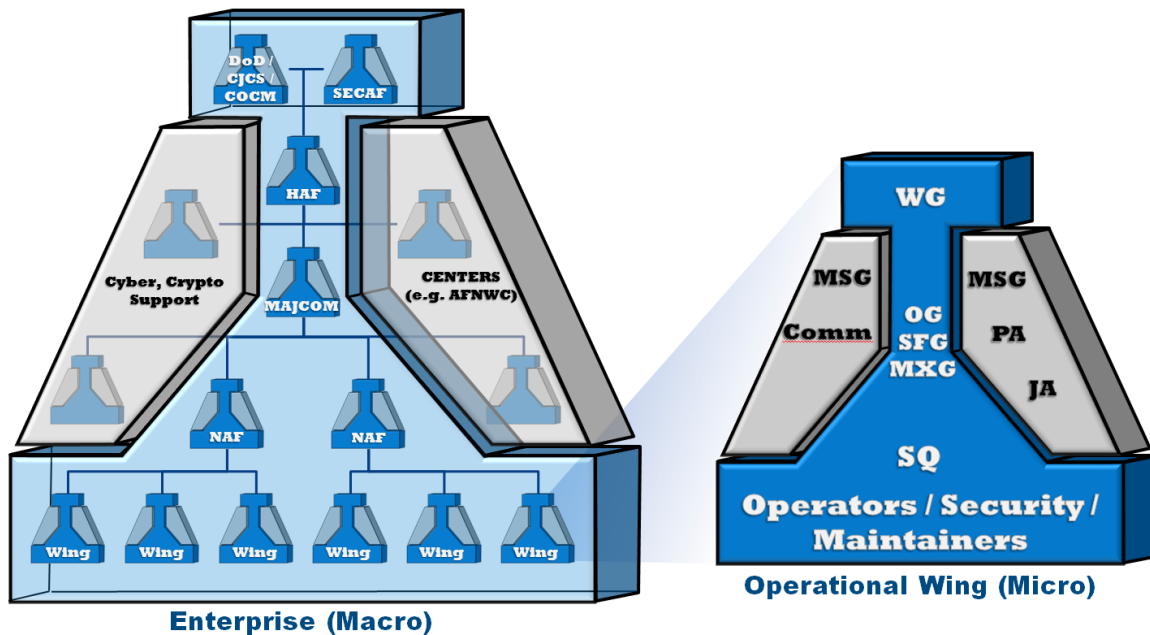


Figure 2. Macro and Micro Applicability of Mintzberg's Model

Operating Core

The operating core, as the name implies, is comprised of the operators. As depicted in Figure 2, depending on the organizational level being looked at, the operating core could be a wing within the AFNE (macro view), or it could be the actual operators within an operational wing (micro view) (Jones 2011). The operating core is the heart of any organization due to its primary role as the group of personnel that performs the basic work, not to mention the bulk of the work necessary to accomplish the mission and goals of the organization. The operating core functions quite self-sufficiently as it continually receives inputs, transforms them into required outputs, and provides crucial task support for upper levels of the organization (Daft 2013). Due to the criticality of the operating

core, the organization as a whole seeks to protect it, and for this reason, standardization is prevalent throughout the core (Mintzberg 1979).

Middle Line

As organizations grow, or in the case of an established large commercial organization and the AFNE, personnel will require middle line direct supervision. The middle line (also known as middle management) comprises a majority of the administrative component of the organizational design and connects senior leaders with the first-line supervisors. Similar to the operating core, the middle line takes on different forms depending on what organizational level is being looked. Middle line personnel could represent MAJCOMs and Numbered Air Forces (NAF) within the AFNE, or it could represent squadrons and groups within an operational wing.

The middle line aspect of organizational design focuses on the managerial and analytical functions of leaders. Management within this level are directly responsible for department-level implementation and coordination on senior leadership strategies and goals for the organization. When additional leaders are brought into the organizational design, a number of administrative actions are also added to assist in the management of processes and flow of information between the operators performing the work and the personnel supervising (Daft 2013). The number of middle line personnel typically depends on the size of an organization. Small organizations can minimize the number of managers needed; however, as the organization grows, so too should the number of managers. As the span of control of each manager increases, middle line personnel often incorporate more standardization. This standardization not only helps manage the worker

processes, but also it provides a means of evaluating and analyzing the effectiveness of the organization (Mintzberg 1979).

Strategic Apex

The strategic apex of the organization consists of the senior management or leaders. Personnel holding positions in the strategic apex have the overall responsibility of the organization. These senior leaders ensure the organization accomplishes the assigned mission by providing the necessary direction, strategy, goals, and resources upon which all subordinate levels will build upon. In addition to simply accomplishing the organization's mission, senior leaders must ensure it does so in an effective way in order to meet goals and objectives of other organizations that have higher levels of control or power over them (Daft 2013). For example, an operational wing accomplishes the mission to directly support goals and objectives of various Air Force headquarters. Likewise, the AFNE accomplishes its mission in direct support of DoD and Presidential goals and objectives (Donley 2011, Jones 2011).

Because senior leaders are responsible for developing their organization's strategy to accomplish the mission and to support the next level up in the organizational design, they must also identify and manage a set of boundary conditions associated with the organization. This includes relationships with other organizations, interactions with external factors, and the environment for which the organization operates. For the organization to be effective, senior leaders must convey the strategy and supervisory philosophy down to the lowest levels within their span of control (Mintzberg 1979).

Support Staff

The operating core, middle line and strategic apex elements of organizational design work together to constitute the operational workflow. The support staff is a major element in organizational design that exists solely to provide all necessary support to the personnel in order to facilitate smooth operations within the operational workflow and to provide administrative upkeep for the organization. Support staffs are found at every level of organization and are numerous in quantity. Many organizations could outsource support services, but instead choose to keep them as a part of the organization. Keeping support staffs within an organization not only reduces uncertainties associated with external factors, but also places them under control of senior management for more responsive support to the operational workflow (Mintzberg 1979).

Technostructure

The technostructure as detailed by Henry Mintzberg applies more to commercial or industrial businesses than it does to the nuclear enterprise. Primary characteristics of this technical support area of the organization are the technological innovation functions, as well as the responsibility to help the organization change or adapt through the use of standardization (Daft 2013). The technostructure seeks to effect standardization of an organization through a variety of controls and analysts. Large organizations depend on standardization to eliminate or reduce the need for additional direct supervisory personnel. Commercial and industrial businesses apply the design element of technostructure in three main ways. First, businesses employ work study analysts, such as industrial engineers or system engineers, who revise and standardize actual work processes based on their analysis. Secondly, planning and control analysts, such as

accountants or long-range planners, are employed to standardize the organization's outputs. Finally, businesses incorporate personnel analysts that focus on the standardization of areas such as training, recruiting, scheduling, and utilization (Mintzberg 1979).

The technostructure element does not preclude standardization from being accomplished by personnel outside the formal technostructure realm. This is a relevant difference between the AFNE and commercial and industrial businesses. Standardization and work controls within the AFNE are dictated and managed by personnel within the middle line and support staff elements. The technostructure as illustrated in Figure 2 shows that this element is intended to operate outside of the operational workflow. There are organizations within the AFNE, such as communication agencies and other technology-oriented agencies, which fit nicely into this element. For purposes of this paper, the technostructure element when applied to the AFNE will pertain not only to organizations that provide communication and technological solutions, but also to agencies outside of the Air Force that provide crucial products and services to the AFNE to accomplish its mission.

Organizational Design Parameters

Overview

With a basic understanding of organizational design, senior leaders can begin the process of shaping an organization based on design parameters. The resultant organization, as often represented by an organizational structure, is derived from decisions made with regards to a variety of design parameters that deal with a specific set

of formal and informal issues that ultimately affect the structural design. Figure 3 illustrates eight design parameters that play a role in shaping the organizational structure. The design parameters include both formal and informal aspects of workflow, coordination, and communication which subsequently establishes the behavioral pattern of the organization (Mintzberg 1979).

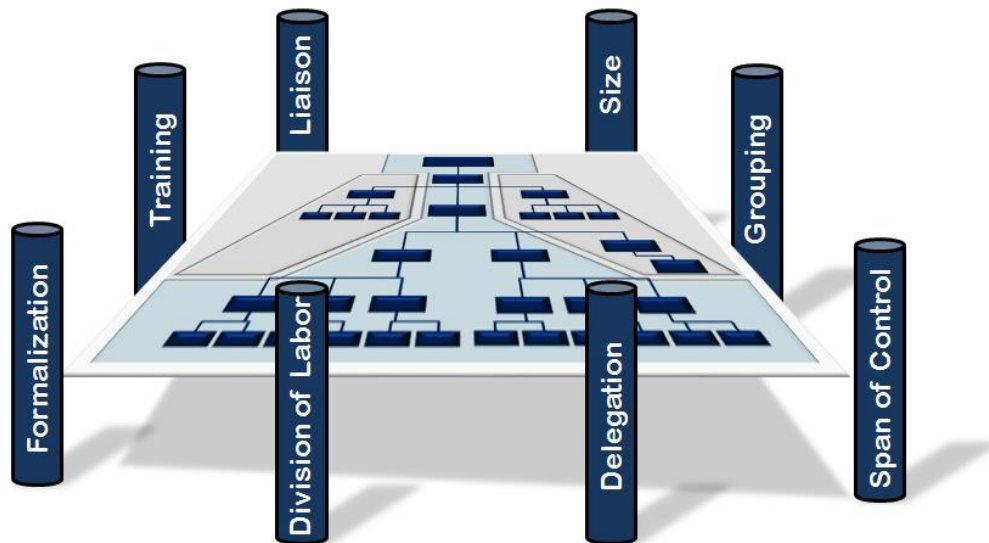


Figure 3. Design Parameters of Organization Structures

Division of Labor

Division of labor is a major component to organizational structure, and is determined by the number and complexity of tasks that are assigned to a particular position within the organization. Large organizations will divide the labor needed to accomplish the overall mission or goal of the organization into a specific job(s) or task(s) by what is known as specialization. This concept has historical roots with industrial markets. With the shift towards mass production, industry recognized economic

advantages for organizing the work force into specialized labor (James L. Gibson 2012). Division of labor is generally accomplished through two major types of specialization.

The first major division is commonly referred to as horizontal specialization. This specialization is designed to increase productivity. Horizontal specialization is primarily targeted at the operating core, and as such, not only represents the predominant labor division, but also is an instinctive aspect to just about every organization (Mintzberg 1979). There is a subset of horizontal specialization that focuses on the specialization of very complex jobs without much vertical management. This specialization is generally referred to as the professional careers or specialties such as scientists, doctors and accountants. Primary horizontal specialization within industry or commerce typically accounts for divisions in labor such as fabricating, assembly, or quality control departments (Gibson 2012). As the specialization becomes more extensive, the range or number of tasks a single individual performs becomes narrower, and vice versa (Daft 2013). It is important to note that job specialization is opposite of job enlargement. With job enlargement, a single individual is responsible for, or is involved with multiple specialized jobs or tasks associated with the organization's mission (Mintzberg 1979). Although opposite, job enlargement is a necessary discussion point senior leaders need to address when making specialization decisions for their organizational design and structure.

The second division deals with vertical specialization. In smaller organizations, personnel in the middle line portion of an organization might also perform the same work as the operating core. However, as organizations grow, it may become necessary to start separating the actual performance of the work from the management or administration of

the work. Separating these two functions is known as vertical specialization (Gibson 2012). This specialization is not independent of horizontal specialization. Having the operating core only perform the work is characteristic of vertical specialization, but a more important relation to realize is that as the labor force becomes more horizontally specialized, the organization will inherently become more specialized vertically (Mintzberg 1979).

Formalization

All organizations incorporate some degree of formalization. Variability is often seen as an enemy in the industrial markets or other businesses that seek to function efficiently (Schultz 2015). To reduce variability and to increase predictability, organizations will seek to standardize work processes to essentially formalize the behavior of the work force (Mintzberg 1979). Formalization takes on several characteristics. Organizations provide job formalization by specifying the work or responsibilities of a particular job (i.e. job description). Within the job, it may be necessary to provide specific rules to the work being performed in order to establish the work flow. Organizations will also institute a set of rules that are applicable for jobs and personnel, or applicable across all situations the organization may face. This type of formalization is typically done in writing and distributed in formal documents such as policy manuals, or as in the case of the AFNE, a series of Air Force Instructions (AFI) with applicable supplemental regulations (Daft 2013).

As work processes, work flows, and coordinating mechanisms are formalized, efficiency within an organization is undoubtedly going to increase. In many instances, especially in industrial production arenas, work flows become so efficient that they

display a machine-like characteristic to the organization. Formalization, as mentioned early in this chapter, is prevalent in the operating core due the critical nature of the work being performed. However, the closer we move to the strategic apex area of organization design, formalization tends to decrease. Organizations that rely heavily on formalization, especially as it pertains to work coordination are generally known as bureaucracies (Mintzberg 1979).

Training

Organizations must provide a process by which personnel receive training on the specific skills and knowledge required to perform their assigned duties. Professional occupations (e.g. physicians, scientists, etc.) require a great deal of complex training over long periods of time; however, most commercial and industrial organizations tend to break down knowledge and job-related skills training into simple, easily-learned tasks. In addition to skillset training, organizations will also provide indoctrination training to its employees. This type of training is particularly beneficial to the organization because it provides a formal means of socializing an employee to the vision and values of the organization, and is vital to instilling culture within the organization (Mintzberg 1979).

Unit Grouping

A very important design parameter which senior leaders must establish, is the basis for which the labor force will be grouped or departmentalized. Organizations can be departmentalized by function (e.g. finance, marketing, manufacturing), by geographic locations, or by product/service. No matter which grouping is established, the common reality is that grouping needs to be based on the needs of the organization from the strategic apex to the operating core as well as from general tasks to specific tasks (Gibson

2012). Effective grouping does have significant advantages. It allows organizations to incorporate common supervision among positions or smaller units, and require those positions and units to share common resources. With commonality among units, not only can standard performance indicators or evaluations be implemented, but also an increase in peer-to-peer coordination can be achieved (Mintzberg 1979).

The departmentalization of an organization will be based off one of several factors. Consider one common method found in commercial and industrial businesses in which the work force is grouped by work processes or functions (Gibson 2012). The decision to group by work processes or functions is affected by interdependencies. For example, grouping by processes or functions requires smooth operations between horizontally specialized labor forces and a natural workflow. Other interdependencies include such considerations as forming groups large enough to function efficiently and the awareness of social relationships that come with groupings (Mintzberg 1979). Taking into account the numerous interdependencies in play, leaders can decide whether to group their organizations functionally or by other common methods based on specific skillsets, by products produced or services rendered, and by location (Gibson 2012).

Unit Size

Organizations and the units within organizations vary in size, but nevertheless, it is a design parameter that affects the organizational structure. The actual size of the organization itself is not a significant parameter because the majority of organizational structures could apply equally to small businesses and extremely large businesses. However, companies that are in the startup phases or relatively small may not have the resources or manpower to support many organization structures. The size of units or

departments within an organization plays a larger role with regards to the design parameter.

There are several characteristics associated with the size that are worth noting. Organizations with large number of personnel rely heavily on standardization, especially given an increase in similar tasks and responsibilities between groupings within the unit. Furthermore, in larger units, there is a decrease in direct supervision; therefore, an increase in autonomous or individual work being performed. This creates a need to design processes to ensure information flow up and down the hierarchy is accurate and understood. Smaller units on the other hand, are naturally geared for close direct supervision, easy access to supervisors and greater mutual coordination for complex tasks. In fact, with less vertical specialization, supervisors often perform non-supervisory tasks in support of the organization's goal (Mintzberg 1979).

Span of Control

Directly related to the size of an organization is the span of control of the supervisors, or simply put, the number of individuals that report to a single supervisor. The span of control is generally discussed in terms of a wide control or the other extreme of narrow control (Gibson 2012). As the number of individuals under a supervisor increases, the span becomes wider. This is common within large organizations that limit the number of supervisory positions. Personnel in this type of environment, as previously stated, experience an increase in autonomous or individual work being performed. Supervisors in this situation have the challenge of being required to understand more of the work being done under their supervision in order to make the best decisions. They do not have the luxury of multiple layers of management to filter data and streamline

decision making; however, the problem of information being distorted is minimized. By contrast, the narrow spans are marked with multiple layers of supervisors, which provide more direct access to the supervisors by subordinates and also provides supervisors more time for decision-making (Daft 2013).

Delegation

Delegation and the degree of centralization focuses on where the authority lies to make decisions and to what extent authority can be delegated to lower levels.

Centralization is the terminology that captures the notion that all authority and decision-making resides at a single point within the strategic apex. This lack of delegation results in the strictest control for coordinating decision within an organization (Mintzberg 1979).

Centralization does have a couple of benefits. Organizations can realize cost savings.

Pushing decision authority down to lower levels carries with it a need to invest in training programs commensurate with the level of delegated authority. Furthermore, an organization would also institute additional systems or programs to allow senior leaders the ability to review or analyze the performance of the subordinate decision makers and the outcomes of any decision made. Organizations will also benefit from reducing the duplication of functions. Simply put, as units become self-supporting and less dependent on higher levels of management for decisions, the duplication of effort increases (Gibson 2012). Each organization must decide if the cost of decentralizing outweighs the benefits of a centralized organization.

Decentralization refers to the delegation of authority to lower echelons. With authority residing at various levels, organizations are in a better position to adapt and respond to changing conditions. In large organizations in particular, one single person

can't be reasonably expected to possess all the knowledge to make all decisions. Vertical decentralization pushes decision-making authority down the chain of management. Selectively decentralizing allows authority to be given over specific decisions and to specific levels of management. This type of delegation is crucial for organizations that are grouped functionally or even by product and/or service (Mintzberg 1979). Although decentralization is often thought of in the vertical aspect, horizontal decentralization also occurs within industry. This decentralization (typically with analysts within the technostructure area of commercial and industrial businesses) passes decisional authority to the workers; however, organizations utilizing this must rely on standardization and effective coordination (Mintzberg 1979).

Liaison Devices

The last design parameter is more of a coordination tool than a major structural element; however, liaison devices must be incorporated into the formal organizational structure as a method of establishing contacts between other organizations and between individuals within the organization. Liaisons are an excellent resource for businesses to utilize if the size of their organization is small or is being reduced. As Mintzberg points out, greater reliance on liaisons by organizations typically is related to units of smaller average size (Mintzberg 1979). Organization should be open to information and ideas from units outside their structure. Liaisons provide valuable input due in part to diversity of thought or perspective. Couple this with mutual respect and collaboration, liaisons can assist an organization in their efforts to develop enduring business processes (ISO 2010).

Various liaison devices are used within organizations. One common addition to organizational structures is an actual dedicated liaison position. These positions are

extremely useful when it is necessary for an organization to maintain considerable coordination with another unit. Coordination is often less formal and generally does not flow through vertical hierarchy. On a larger scale, task forces and committees are often formed. Task forces are intended to be temporary and are established to resolve a specific issue. Committees on the other hand, are designed to be more permanent as they consist of regular meetings to discuss issues and concerns of a common interest or theme. But with either one, these two devices can easily become formalized and incorporated as part of the organizational structure (Mintzberg 1979).

Variables

Variables play an important role in shaping an organization. The design parameters previously discussed shape the structure of an organization based on the decisions made by senior management or leaders regarding each parameter. The parameters discussed provide a good characterization of the internal elements common to every organization. However, the decisions made with regard to these parameters are influenced greatly by conditions that are external to the organization or outside the organization's control (Daft 2013). As such, a very important relationship is evident. External factors are essentially a set of independent variables that act on the design parameters, essentially making the design parameters a set of dependent variables. Figure 4 illustrates the relationship between the variables. In the figure, a set of independent variables are listed on the external edges of the diagram. These independent variables can be reduced into a small numbers of common groupings sometime referred to as intermediate variables. The design parameters (dependent variables) are influenced by one or more of the intermediate variables which were derived ultimately from the

independent variables (Mintzberg 1979). Interactions between the variables often creates blurred lines when it comes to keeping them as separate entities. Confusion stems from the fact that the external factors not only represent the environment the organization is working in, but it also may reflect the culture within the organization as well. Moreover, these external factors may appear to shape an organization because the factors often become elements of work processes (Daft 2013).

Because the design parameters are dependent upon the conditions of the external factors, the structure of an organization is not considered permanent. Major changes in one or more external factors will frequently result in an organization making changes to its structuring. For example, a recent organizational change of significance was initiated during the summer of 2014. The SECAF, Deborah Lee James, and the CSAF, General Mark A. Welsh III (external factor: ownership) announced changes that involved deactivation and realignment of multiple units involving HAF, MAJCOMs, NAFs, and Field Operating Agencies (FOA). Major changes cited were initiated due to conditions with economy (external factor: environmental hostility and complexity), to increase efficiencies (external factor: member's needs; environmental stability) and to save costs by reducing manpower (external factor: organization's size) (AFPAO 2014). The Air Force will certainly make a decision to reorganize again in the future. To effectively restructure, the Air Force and any commercial or industrial organization must carefully consider the relationship between the dependent and independent variables. Furthermore, organizations must realize that there is not "the perfect structure", but rather a "best structure" given certain external conditions that affect the design parameters (Mintzberg 1979).

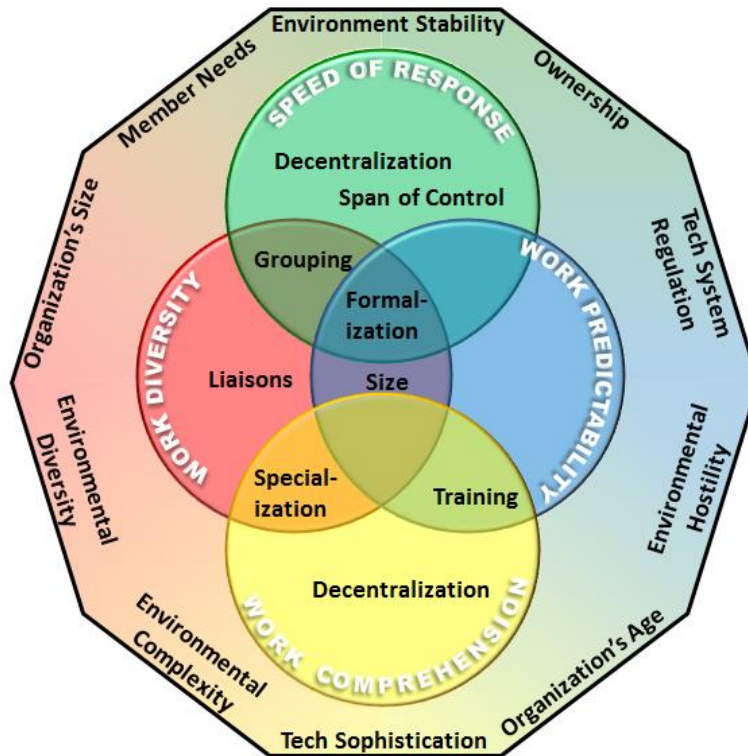


Figure 4. Relationship Between Independent and Dependent Variables

System Workflow and Coordination

Overview

The basic parts of the organizational design and all the departments within the organization must function effectively if a business or enterprise expects to survive. To do so, units must rely on formal and informal workflow and coordination processes. As businesses continue to grow in size and complexity, the workflows and coordinating mechanisms quickly become apparent that they are the essence of what holds the organization together. Figure 5 provides a graphical representation of various workflows and coordination aspects vital to any unit. Although represented generically, the concept is equally applicable to an isolated commercial or industrial business as it is to a compilation of units forming an enterprise.

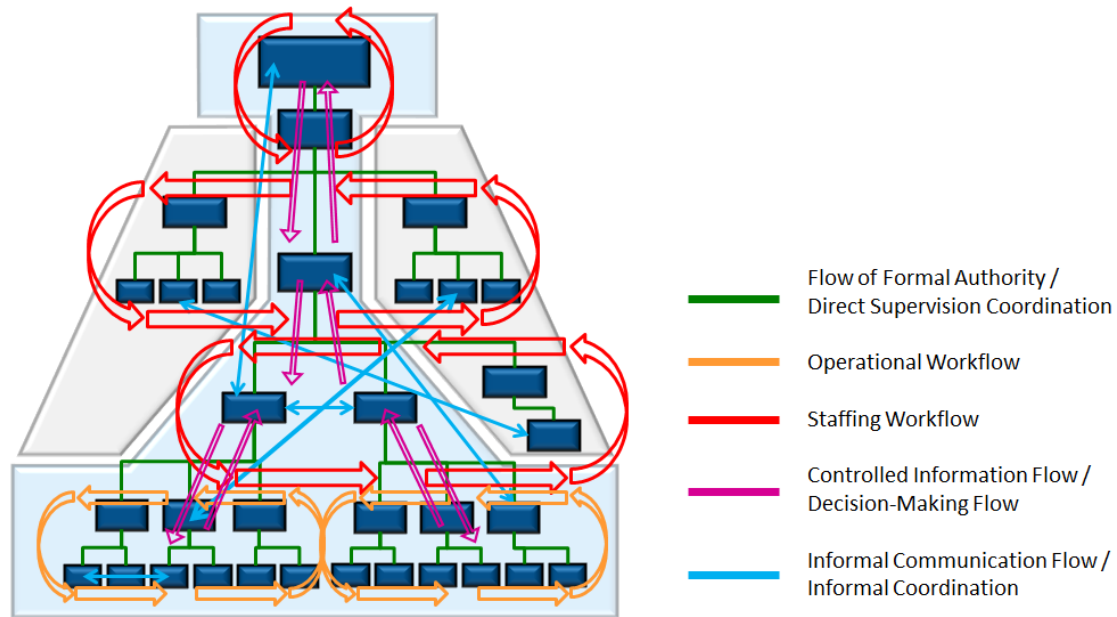


Figure 5. Representation of Organizational Workflow and Coordination

Informal Flow and Coordination

Variations in the size of organizations can equate to variations in coordination efforts. In really small organizations, the majority of the work is coordinated and completed in rather simple processes using informal communication. This is natural due to the fact that informal communication is the simplest form of coordination. Although simple, informal coordination has proven to be the only coordinating mechanism to work in very complex, difficult and dynamic situations. An organization may be highly specialized horizontally with a multitude of specific tasks; however, in the event of a circumstance requiring the organization to quickly adapt, it is the informal communication between experts which leads to solutions. In large organizations, this informal coordination is also present and manifests itself in three ways (Mintzberg 1979).

As in small organizations, informal coordination is manifested through direct peer-to-peer communication. Operating in this fashion excludes a manager from participation and as a result, circumvents direct supervision or formal authority. A second manifestation is accomplished through the informal communication between subordinates in different echelons of an organization, but not within the same chain of command. This direct diagonal communication also bypasses direct supervision and hierarchal structures. Finally, there are instances that require individuals to coordinate by overriding the chain of command and communicating with managers further up the chain. This may be particularly useful when information can't afford to be distorted in any way (Mintzberg 1979).

Workflow and Coordination Derived from Authority

The nature of an organization's workflow and coordination is affected by the unit's leadership. Informal communication and coordination will be prevalent in large organizations because the work being done is controlled by the workers actually doing the work. However, large organizations will institute mechanisms to formalize work flows. Based on design parameter decisions, senior leaders will establish an organizational structure that includes the layout of the foundational flow of formal authority. The organizational structure on paper is just a map and usually does not depict informal communication flows; however, it is useful in presenting important aspects of the business, such as the division of labor, groupings, and the flow of authority. Establishing the flow of formal authority enables another coordinating mechanism of direct supervision (Mintzberg 1979).

Direct supervision is the first method of formalizing the coordination process. Informal communication will very likely be involved, but to formalize coordination, a leader is chosen and takes responsibility for the work or product developed by the subordinate group of people. To achieve coordination, supervisors will need to develop or relay instructions or requirements and will actively monitor the performance of workers, providing necessary oversight to further progress. Direct supervision carries with it a certain level of formal authority making this coordination mechanism inseparable from the flow of formal authority (Mintzberg 1979).

In addition to the coordination achieved through direct supervision, the flow of authority as depicted on a company's organizational chart also sets in motion two recognized flow conduits. As illustrated in Figure 5, controlled information flows formally from the strategic apex down to the operating core. As the information or instructions flow down the chain, managers at all levels typically expound on the guidance transforming the instructions from a strategic overview to detailed work plans. A good example of this lies in the Air Force publication system as illustrated in Figure 6, in which strategic direction is provided by the SECAF, tactical instructions are provided by the operational units, and a myriad of instructions are provided by headquarter agencies at multiple levels. Another conduit flows information up from the operating core to the strategic apex. This conduit not only provides feedback on workers, job performance or health of the organization, but also exists as the formal decision-making flow up to the appropriate levels of authority.

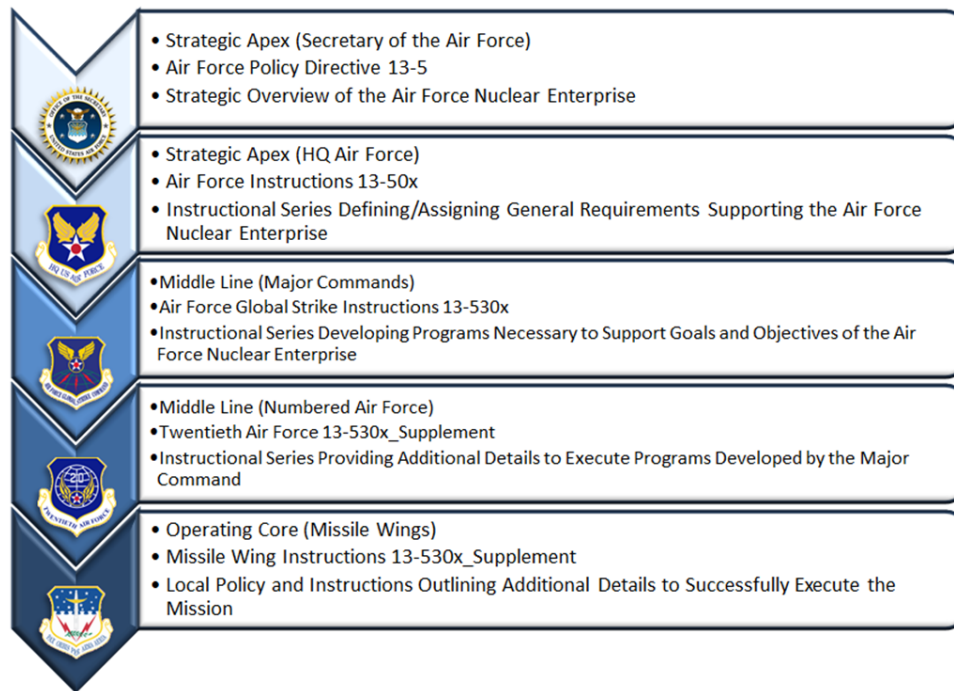


Figure 6. Illustration of Air Force Publication Chain Applied to a Missile Wing

Horizontal Workflow and Standardization

In addition to vertical workflow and coordination established by authority, an organization is also dependent on horizontal workflow and coordination. The first of two main horizontal workflows occurs primarily in the operating core (Mintzberg 1979). Operational workflow involves all aspects of work accomplished through a given process boundary, starting with inputs and continuing through the processing phases until the desired output is achieved. Horizontal workflows in the industrial markets were revolutionized by Henry Ford and improved upon by Taiichi Ohno. Industrial workflows now are streamlined to transform materials into products (Goldratt 2014). Commercial markets and even the AFNE are similar in that they take inputs and transform them into an output. These outputs can be thought of in terms of transforming merchandise into

sales, information into documents, or nuclear alert requirements into schedules and execution of the alerts.

The second horizontal workflow occurs between staff personnel for of decision-making purposes within the middle line or strategic apex. Horizontal workflow within the strategic apex facilitates open communication between leaders and ensures the mission, vision, and goals of the organization are right, that the organization is meeting the goals, and that any mission or priority changes are well vetted and effectively communicated down the chain. At lower levels, horizontal communication between staff personnel is most valuable if it stretches outside of the middle line and into the technostructure and support staff portion of the organizational design. Horizontal workflow at both the middle line and strategic apex levels are crucial to provide adequate and relevant instructions or guidance to the operating core, as well as to support decision-makers with pertinent and accurate information (Mintzberg 1979).

The communication and coordination done both vertically and horizontally is fundamental to the success of one final coordinating mechanism of standardization. Standardization is characteristically unique in that coordination is accomplished before any work starts (Mintzberg 1979). Figure 6 illustrated how the number of detailed instructions and procedures grow significantly as controlled information flow approaches the operating core. For this reason, standardization is most prevalent in the operator core. This is acceptable since high levels of standardization in operator cores are typically necessary. Basic concepts derived from the organization's strategy, goals and so forth are relatively understandable; however, the application or translation of the requirements that

may not be. Without clear articulation of standards or expectations, assumptions can make their way into processes and threaten the success of the operators (Goldratt 2014).

Standardization is accomplished through three primary methods. Standardization of processes occurs when an individual designs a process and codifies requirements and specific procedures for executing the process and/or standards that must be met.

Advantages to this type of coordination are derived from the minimal need for direct supervision and virtually no need for informal coordination. Standardization of outputs is less structured than processes, but nevertheless important. With outputs, the results (e.g. product dimensions, work performance, etc.) are standardized, but not the methods for accomplishing the results. Examples of output standardization would include a requirement for 25-pound chunks of steel be prepared for raw material processing, but not specifying that the chunks need to be in 1-inch flat sheets. Similarly, regulations may place a requirement for a two-person nuclear alert crew, but will not generally specify the need for the two people to be from the same squadron or same gender. Finally, when processes or outputs can't be standardized, managers can standardize skills and knowledge through specific training to indirectly achieve what the other two standardization methods achieve directly (Mintzberg 1979).

Constellations

Informal communication, no matter how random it appears, may actually form an informal working network or grouping known as a constellation. As illustrated in Figure 5 and corresponding discussion, these constellations are related to the flow of formal authority. These informal networks are formed based on common interests or functions. Mintzberg explains this concept as it relates to a newspaper company. Within the

newspaper company, personnel at all levels perform their specific jobs; however, people may be involved with formal or informal coordination to form constellations such as a printing, editing, or circulation constellation (Mintzberg 1979).

Constellations are just as applicable in the Air Force. Figure 7 lays out a general organizational structure of the Air Force down to the NAF level. One overlay on Figure 7 (green overlay) represents a constellation of units that have specific roles to accomplish nuclear certification for ICBM systems or components. This constellation is typical in that it is relatively simple with just a few units involved. Unfortunately, when looking at AFNE as a whole, the resultant constellation becomes complex. A second overlay on Figure 7 (red overlay) begins to show this complexity. An important aspect to work constellations indirectly depicted, is the realization that each constellation is responsible for some portion of decision-making for the Air Force. Keeping in mind that this decisional authority will vary based on the amount of decentralization (Mintzberg 1979).

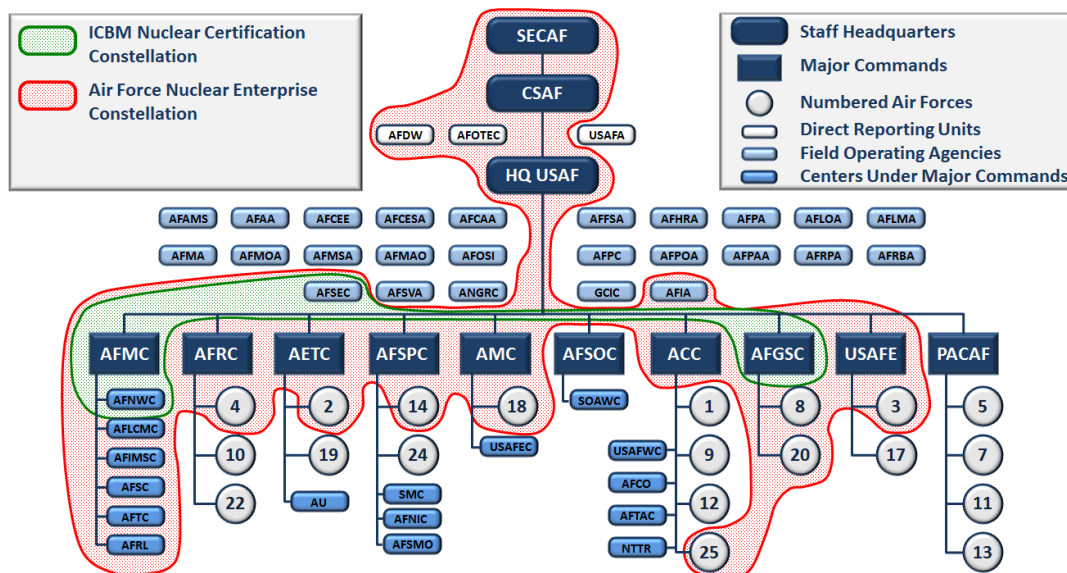


Figure 7. Air Force Organization Down to Numbered Air Force Level

Commercial and Industrial Organizational Structures

Overview

An organizational structure, depicted visually by way of the illustrative organizational chart, paints the picture of how an organization is arranged to utilize its workforce in specific jobs to accomplish goals or objectives. This arrangement not only encompasses the fundamental structure of an organization, such as the formal chain of authority and span of control, but also more complex aspects such as the allocation of responsibilities for various functions and relationships between different positions within the organization. During the early 1900s, industry was transitioning into a mass-production style of operations, and as such, adopted a machine-like, bureaucratic organizational structure to increase efficiency and productivity. However, organizational theorists began to popularize the notion that organizational structures could be tailored to meet the needs of an organization (Encyclopedia of Management 2009).

By tailoring the organizational structure based on a given set of design parameters, the organization can implement a structure that is best suited for the business in lieu of the traditional hierarchy. The United States Air Force can benefit from the commercial or industrial markets when it comes to organizational structure decisions. Government entities and other large bureaucracies are not as likely to try drastic changes or experiment with different organizational structures as commercial or industrial businesses. Therefore, agencies are able to save time and resources by analyzing the results of changes that have occurred with well-established companies.

Two Extremes

The majority of organizational structures being utilized in the commercial and industrial sectors today will fall somewhere along a continuum ending at one of two extremes. At one end of the spectrum is the “tall” organization. As illustrated in Figure 8, the tall organization (also referred to as mechanistic) is most readily recognized by the number of layers in the structure. Within industry, an organization with many layers of management is generally indicative of a centralized organization with narrow spans of control. Likewise, as a company moves toward the other extreme of spectrum and becomes more of a “flat” organization (also referred to as organic), the company generally is thought of as decentralized with wide spans of control (Ebert 2013) (Daft 2013). One caveat to this generalization lies with the leadership’s decision as to whether or not there will be any delegation of decision-making authority or not. Decisions made in highly organic organizations often are done by the workers and not senior leadership. However, with very small businesses, the owner and/or the Chief Executive Officer (CEO) makes every decision (as is the case with simple organizational structures).

In addition to the delegation of authority and span of control differences between tall and flat organizations, formalization and communication also range in scope. As organizations continue to grow in size and in layers of management, there is a real need to establish a comprehensive set of rules, procedures and standards to effectively communicate the company’s goals and responsibilities. Therefore, as a mechanistic organization, information flow tends to be formal and primarily conducted in vertically up and down the chain. Flatter, organic companies on the other hand, are not typically plagued with a tremendous amount of rules or controls. As a result, information flow is

conducted via informal methods and conducted horizontally across all departments, as well as vertically (Daft 2013).

The daily operations of companies are also greatly affected by where it sits on the structural spectrum. Tall structures are often seen as rigid and slow in the decision-making process because of the many levels of management that decisional information must pass through; however, the standardization inherent with a mechanistic organization leads to efficient production capability (Daft 2013, Mintzberg 1979). Organic organizations are marked with a sense of disorder and inefficiency, but with decentralization are able to make quicker decisions and adapt to changing environments easier (Ebert 2013). Most companies do not fit an organizational structure that pegs one of the two extremes discussed, but rather chooses (or creates) a structure along the continuum that serves their needs. Of the various designs, seven of the most common organizational structures are now presented for review.

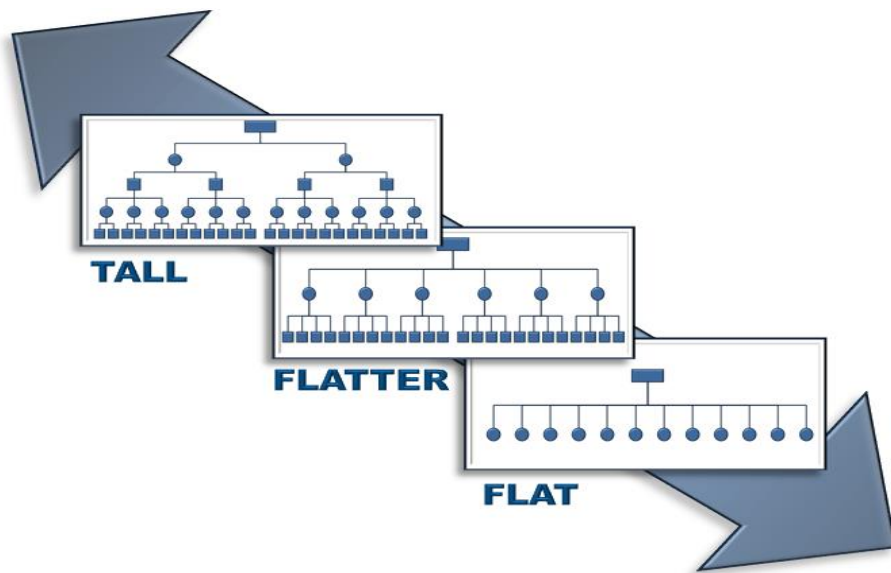


Figure 8. Organizational Structure Continuum

Simple Structure

The most basic of all organizational structures is the simple structure. This construct is most widely used in rather small businesses, especially during the startup phase. As depicted in Figure 9, small businesses use this structure because it works well for businesses with low number of employees. With few employees, simple-structured organizations are generally completely centralized, which means that not only does all decisional authority rest with the business owner, but also the owner generally has a wide span of control. In addition, fewer employees translate into low specialization of jobs. Therefore, all employees must be able to perform a variety of tasks (Ashe-Edmunds 2015, Naoum 2001, Usmani 2012). A good example of a simple structure would be a landscaper. The owner would more than likely hire an assistant to help with orders, scheduling and billing, and would also employ several individuals to assist in the variety of jobs a landscaper would be involved with. All employees report to the owner, all employees perform a variety of tasks, and the owner makes all business decisions.

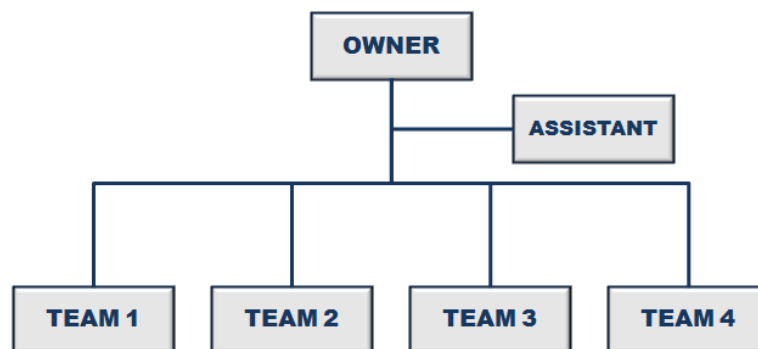


Figure 9. Notional Simple Structure

For small businesses, the simple structure has some advantages. With this construct being characterized as completely centralized, owners benefit from maintaining

full control over business operations and growth. As the sole decision authority, the owner is involved in every decision the business faces, making the owner completely aware of the issues impacting the business. The owner under this construct has a wide span of control; however, the lack of layers in the business due to fewer employees highlights another advantage. An owner communicates personally with all employees which allows decision information to be passed to the owner directly and without distortion from additions or omissions as would be the case in tall organizational structures. Ultimately, decision-making can be done quickly allowing for the business to adapt to changes easily (Ashe-Edmunds 2015).

Conversely, some of the advantages listed above can also be seen as disadvantages for using a simple structure. With the owner maintaining sole decision authority, the entire business relies on the owner to make timely decisions. This presents a disadvantage to consider with regard to the owner's absence. In the event an owner becomes sick or takes leave, decision-making comes to a halt. A decision could be made by the owner while away from the office, but that is indicative of a second major disadvantage. With few employees, there is virtually no vertical specialization which requires the owner to perform labor along with the employees. Couple this with the need to make all decisions, the workload on the owner can quickly become overwhelming (Ashe-Edmunds 2015).

Functional Structure

The design of the functional structure makes it a popular construct for today's organizations. The construct is believed to have its origins back with the emergence of the industrial age, as top management officials sought for increased efficiency. Figure 10

illustrates a typical construct of an organization functionally aligned. The intent of this construct is to have few managers at the top and the preponderance of employees toward the bottom forming a pyramid shaped organization. Employees are grouped by functions such as advertising, engineering or assembly, and the employees are often further specialized within each function such as a drill operator or metal press operator within the manufacturing department. With multiple layers in the organization, middle-line management is necessary for supervision and to facilitate information flow. Decentralization is limited vertically and horizontally within functionally-aligned organizations. Authority is delegated, but mainly to the functional department lead (Griffin 2015, Usmani 2012, Naoum 2001).

The most successful companies using the functional organization structure are ones that have limited themselves to one (or very few) products or services. With limited products or services, companies are able to institute a high level of formalization into processes and procedures. This naturally leads to high operational efficiency (Griffin 2015). During the summer of 2013, Microsoft© shocked the business world by changing its organizational structure from a divisional structure to a functional structure. Because this change has only been in effect for a couple years, the verdict is still out on the success. Many analysts question Microsoft's© decision because functional organizations do not fare well with many different products, which in Microsoft's© case is thirteen (Acohido 2013, Thompson 2013).

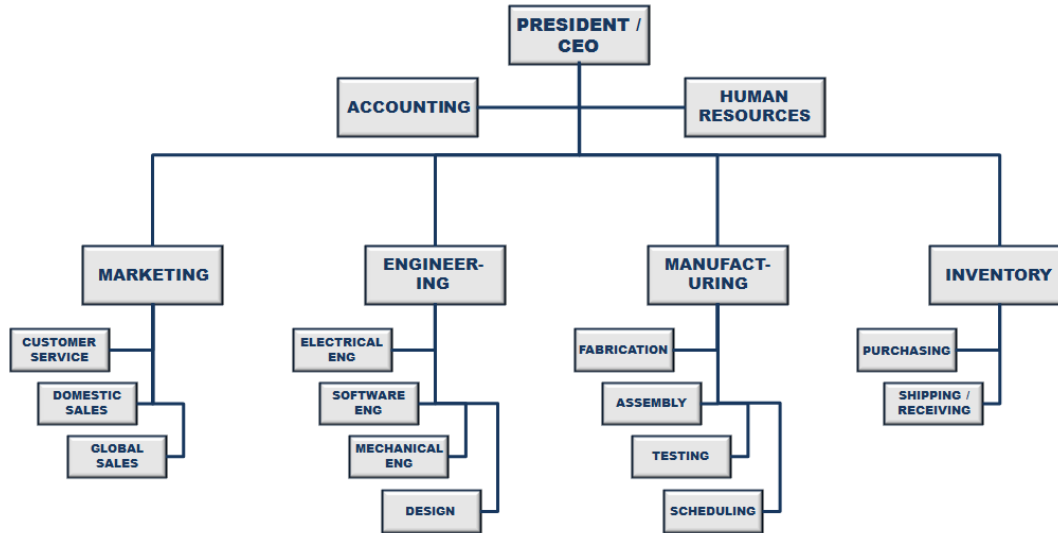


Figure 10. Notional Functional Structure

Functional structures offer a few advantages for the business owner and employees. The key advantage for the owner is in operational efficiencies. With the ability to centralize human skills and business resources into a single location for a single product or service, the owner benefits from increased efficiency. In addition, the specialization of skills among the employees serves to increase productivity. As a result, efficiency, productivity and strong peer coordination ultimately maximizes organizational performance. Employees, unlike the simple structure, benefit from having career paths and the opportunity to move up the ranks into higher positions within the company (Davoren 2015, Griffin 2015, Usmani 2012).

Similar to the simple structure, the key advantage also contributes to disadvantages. Because functional organizations work best with very limited product or service lines, they are not able to adapt quickly to external influences while maintaining a stable environment. Functional organizations may benefit from production efficiency for their product; however, they sacrifice innovation. In addition, the structure allows for

high formalization, but this is not without disadvantages as well. Due to the rigidity that comes with standardization, communication and coordination becomes inflexible.

Unfortunately, this sluggishness slows down decision-making processes contributing to the company's inability to adapt quickly when necessary (Griffin 2015, Davoren 2015).

Divisional Structure

The divisional structure is comparable to the functional structure, making it another widely used construct. The origins of this construct can be traced back to the twentieth century with Dupont, a well-known chemical company. For nearly two decades in the early 1900s, Dupont was organized by functions, but decided to organize by divisions after adding paint products into their portfolio. This change not only ushered in a new organizational structure that is very prevalent in businesses today, but ultimately saved the company (Thompson 2013). Divisionalizing a company, especially as product/service lines grow, involves grouping personnel into large sections based on a market or division, such as Dupont's "Polymer & Fiber", "Industrial Biotechnology", or "High Performance Materials" divisions. Typically, each of these divisions maintains its own resources; therefore, they can function independently of each other. Although able to function semi-autonomously, all the divisional entities are bound by administrative controls that serve to foster necessary communication and coordination (Gillikin 2015, Mintzberg 1981).

As is the case with functional structures, the level of formalization of processes and procedures are high. In addition, divisionally-aligned organizations also consist of multiple layers of management within the organization for appropriate supervision and information flow. Decentralization often extends down the chain to various functional

groups within each division with overall control resting with the divisional leads (Bratton 2015). Because divisional structures, as depicted in Figure 11, are characterized by parallel teams focusing on a single product or service, there is often more horizontal communication and coordination across divisions than with functional structures. A byproduct of this arrangement is seen in the fact that personnel assigned to a division inherently become very knowledgeable in their division's product. This often cultivates comradery, increases morale, and greatly influences the culture of the division (Mintzberg 1981, Gillikin 2015).

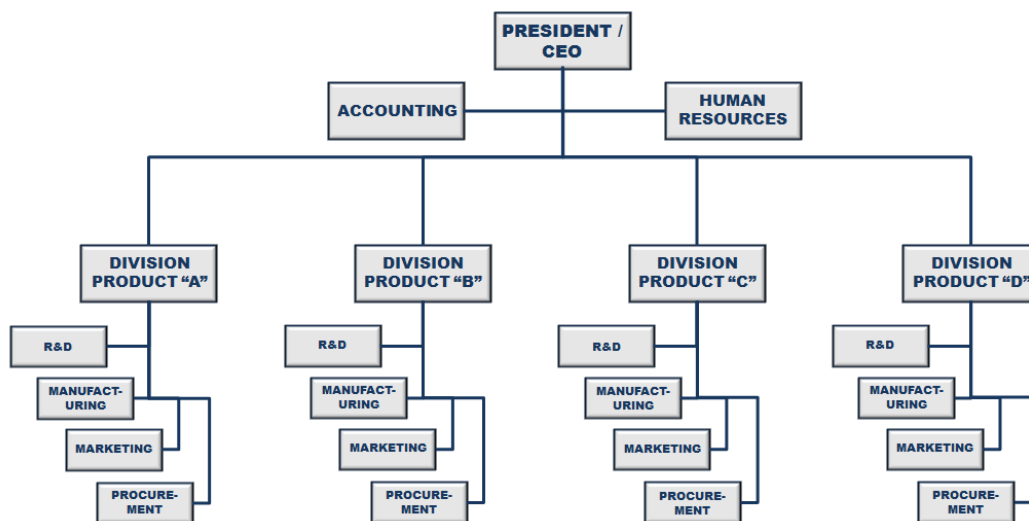


Figure 11. Notional Divisional Structure

Divisional structures have some major advantages that set it apart from functional structures. A company can focus efforts on a specific product or service without effecting the other products or service lines within the organization. With this ability, divisional organizations are able to adapt to environmental changes quicker. A contributing factor to being able to adapt to change is related to the delegation of authority. Decentralization down the chain results in operational decisions being made

closer to the operating core. This is crucial in that it provides middle line management flexibility to focus on deficiencies or other problems that arise. The performance of an organization can easily be monitored, providing top-level management the capability to not only pinpoint problem areas and bottlenecks affecting the goals of an organization, but also to hold specific divisions accountable for the resolution to those issues (Goldratt 2014, Bratton 2015).

The major disadvantages of the divisional structure stem from the divisions acting semi-autonomously. With each division consisting of its own set of resources and performing similar actions as other divisions, the expenditures and administration efforts increase dramatically due to the duplication of resources and activities. The independent nature of each division, without proper coordination, can plague an organization with incompatible products (Devaney 2014). Jason Gillikin from Demand Media provided an example of this by pointing out Microsoft's® error when Social Connector® in Microsoft Outlook 2010® was not able to interface with Microsoft SharePoint® and Windows Live®, resulting in months of extra work to correct the problem (Gillikin 2015). Unfortunately, since each division operates independently, there is great risk that interdivisional rivalries will breed decisions based on politics in lieu of organizational strategies, and tendencies of divisions to undermine other divisions in order to secure valuable funding or resources (Gillikin 2015, Gottlieb 2007).

Bureaucratic Structure

The bureaucratic structure is a management juggernaut. The term bureaucracy normally carries a negative connotation because of its historical roots with government agencies with numerous departments managed by non-elected officials. But in terms of

the commercial and industrial sectors, a bureaucratic organization is a large institution governed by a comprehensive administration system. As with functional and divisional structures, the bureaucratic structure also comes out of the industrial age. Figure 12 illustrates the classical bureaucratic structure. This structure is the best example of a construct that falls on the far left of the continuum shown in Figure 8. Large in size, bureaucratic organizations rely extensively on standardized processes, numerous rules and established standards to achieve coordination of work. A sizable administrative system and many layers of management are needed to provide supervision and execution of company rules (Mintzberg 1981, Ingram 2015).

Bureaucratic organizations are very hierarchal in nature and it is very common for the organization to take on a functional-like structure closer to the top management. With this structure, vertical centralization filters down the chain, but formal authority generally remains centralized near the top of the organization. Many layers of management are inherent with tall structures, and for this reason, bureaucratic organizations are marked with high vertical specialization. In addition, with tall structures, the span of control tends to be narrow resulting in high horizontal specialization. Formalization is the key for bureaucratic organizations to function successfully. But it is the rigid set of rules, best-practices, supervision and so forth that allows complex operations to run smoothly (Ingram 2015, Usmani 2012, Mintzberg 1981). For this reason, companies with enormous amount of controls (internal and external) realize that bureaucratic organizations work well for companies designed for mass production. And since governmental agencies are subjected to a large number of controls, they tend to be bureaucratic as well (Mintzberg 1979).

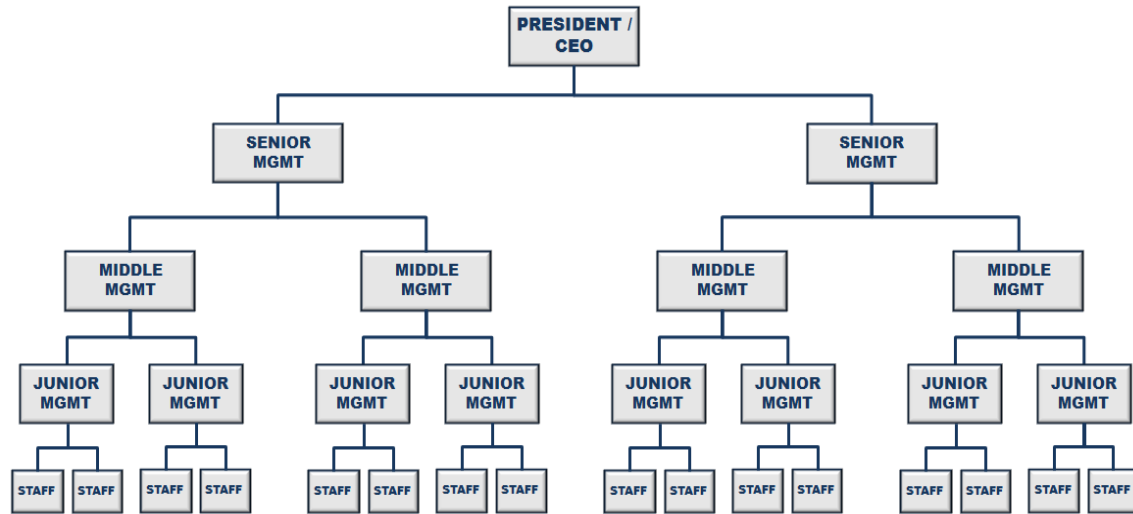


Figure 12. Classic Bureaucratic Structure

Primary advantages for bureaucratic organizations are split between outputs and top level management. Due to high standardization of procedures and processes and the institution of established standards, products are produced and services are rendered in a consistent manner. Products and services are not only consistent, but for mass-production companies, the outputs are provided cheaply and efficiently. Advantages for top management center on strategic goals for the organization. High vertical specialization means that upper management is not as involved in the actual work processes. Therefore, top management can focus on their strategic goals and objectives and make strategic decisions in a timely manner (Ingram 2015, Mintzberg 1981).

Once again, the advantages of the organization carry disadvantages as well. Bureaucratic organizations are typically very large organizations with a large management core. This naturally leads to narrow spans of control and high horizontal specialization. For this reason, morale tends to suffer because the work employees are to perform is usually dull and repetitive. The high formalization and rigid controls are great

for specific purposes, but do not allow for creative thinking or innovative processes. When there is little room for innovation or expedient process changes, the company as a whole is not able to adapt easily to changes in the market or to environmental changes (Ingram 2015, Mintzberg 1981).

Matrix Structure

Unlike previous organizational structures discussed, the matrix structure departs from the traditional hierarchy to some degree. The trademark of this construct incorporates multiple chains of command for a single individual. The consensus for the origins of matrix structures points to the 1960s. As aerospace industries competed for government contracts, they were faced with requirements to show project management team organization and how it related to their company as a whole. In lieu of completely reorganizing, companies decided to incorporate separate horizontal project lines overlaid on the existing vertical hierarchies (Durbin 2014, Gottlieb 2007). As illustrated in Figure 13, the organizational structure is set up as a grid. An employee has a vertical, direct reporting, primary chain of command responsible for one aspect of the company, but is also assigned to a horizontal, secondary chain of command responsible for another aspect of the company (Devaney 2014, Usmani 2012, Naoum 2001, Bratton 2015).

Matrix organizations are typically a combination of functional and divisional structures, and as such, employees experience some job specialization. However, companies take advantage of the specialization to form teams that make up the secondary project lines. These teams are generally formed to draw on strengths and minimize weaknesses within the organization (Johnson 2015). In addition, by using this cross-functional approach within an organization, employees are utilized to a greater extent

than if they were only focused on vertical chain requirements. Ultimately, the teams within the matrix organization contribute to a very successful project management system driven by the need for performance and efficiency.

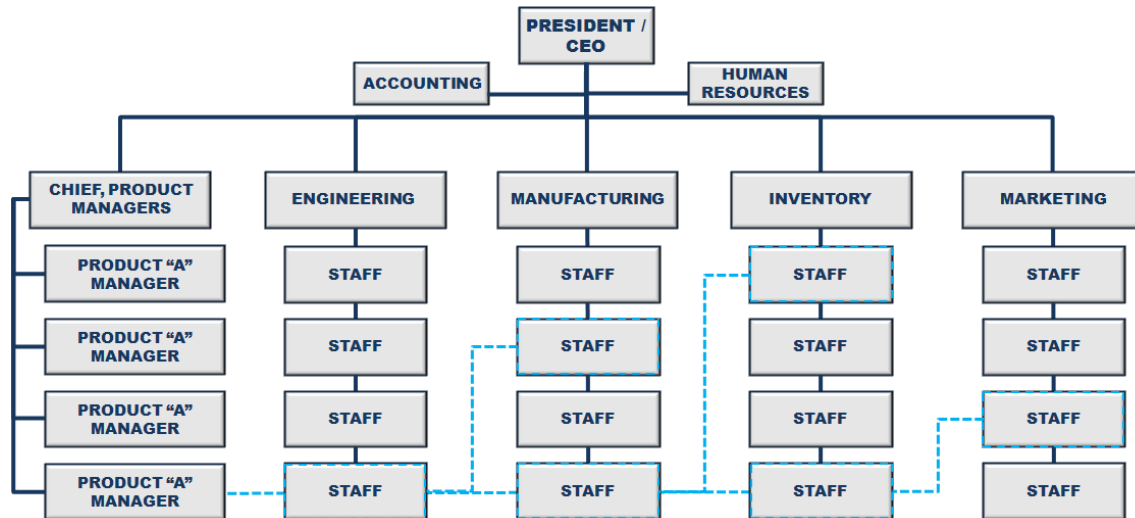


Figure 13. Notional Matrix Structure

The matrix structure offers major advantages. The primary reason for the attractiveness of the matrix structure is in the decision-making process. Communication and coordination are crucial for effective decision-making. In the matrix structure, information efficiently flows vertically as well as horizontally. This is due to the fact that employees belong to more than one chain of command, and through use of horizontally aligned teams, the matrix structure operates as a flattened organization which is known for increased horizontal coordination. Therefore, decision-makers know that information provided to them has been formally coordinated across all departments (Devaney 2014). As mentioned earlier, the teams formed in the matrix structure capitalize on strengths and minimizes weaknesses. These teams also facilitate sharing of resources as subject experts and equipment across the departments are being pooled. Ultimately, the matrix

structure can expedite decision-making, making the construct flexible and responsive to necessary changes (Johnson 2015, Devaney 2014).

Disadvantages of the matrix structure stem from its grid-like construct. The horizontal and vertical chains of command add complexity to the organization. A major complaint from employees is confusion when it comes to authority, and especially when they face competing priorities between two supervisors. Unfair to both employees and managers, these interdepartmental struggles often manifest themselves through conflicting loyalties. This is compounded by managers competing with each other over the more valuable resources within the organization, which left unchecked, could foster a hostile working environment and decreased performance (Devaney 2014, Johnson 2015, Kerzner 2009). Complexity within the organization also drives higher costs, particularly in overhead. With a grid-like construct and multiple chains of command, the organization is forced to establish more managerial positions. In fact, the size of the management core is almost double that of more conventional organizational structures. Finally, complexity from the matrix structure unfortunately affects the employees. If issues discussed in this paragraph are not properly managed, the company is at risk not only of low morale and possible low performance in the operating core, but also of high turn-over rates due to employee dissatisfaction (Johnson 2015).

Process-Based Structure

The process-based structure seeks to resolve an inherent problem common to most hierarchal structures. With typical hierarchal structures, there is often neither a designated person nor office responsible for owning all aspects of a given process. The process-based structure, as a named organizational construct is relatively new; however,

it is a product that traces its roots to the latter portion of the twentieth century when industry began focusing on quality through programs like Total Quality Management, Lean Thinking, or Six Sigma (Hernaus 2008). The distinguishing factor of the process-based structure is that senior managers have cradle-to-grave responsibilities for individual processes, and to be successful, managers are given authority over the processes. Horizontal coordination and workflow is emphasized in process-based organizations as outputs are moved from one function to another until completion. In addition, all measurements and goals are process-oriented in lieu of traditional functionally based thought (Hernaus 2008, Sugiharto 2009, Stanton 1999).

The process-based structure is a good substitution for functionally aligned organizations. Figure 14 illustrates the horizontal aspect of the process-based structure and the fact that there is still a vertical hierarchy associated with individual functions within the organization. Process-based organizational charts depict two aspects that are not common in traditional structures, but are very important to coordination and workflow. Process councils are used for horizontal movements or coordination of a product between departments or processes. For example, a completely engineered product design needs official assignment from the engineering process function to the acquisition function processes to select a contractor to build the product or to acquire necessary materials for an in-house build. A second unique feature is the Centers of Excellence. These centers consist of functional experts, the main gathering point for functional knowledge, and the responsibility to coordinate employee activities as well as administrative actions. Cross-functional coordination of employee activities is necessary

because process-based organizations typically have lower horizontal specialization among the employees (Hernaus 2008).

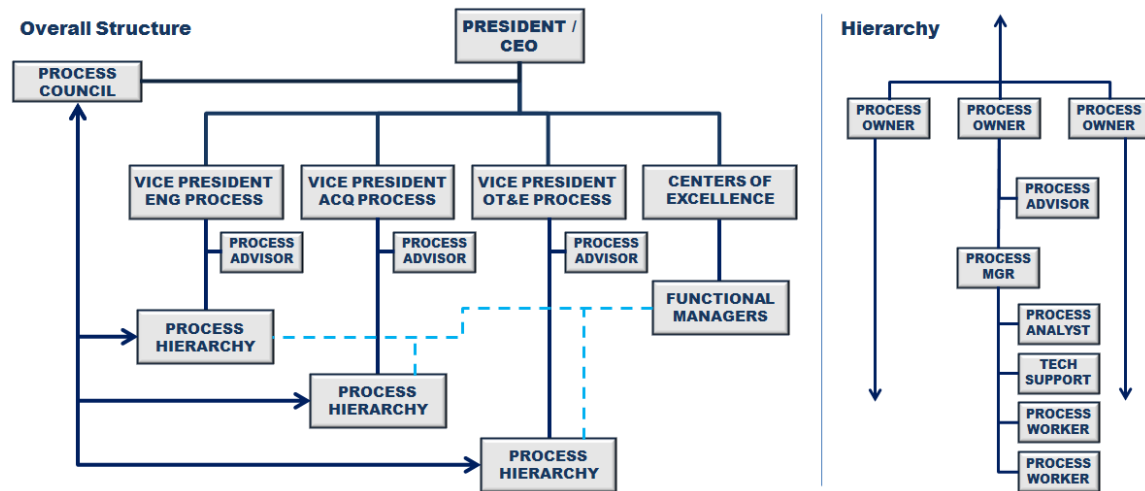


Figure 14. Notional Process-Based Structure

The advantages of the process-based structure stem from the way it was designed to address the shortcomings of traditional structures. By eliminating some bureaucracies, process-based organizations experience great synergy between the work being performed and the organizational structure used to coordinate the work (Hernaus 2008).

Furthermore, this construct not only broadens the knowledge level of employees by creating functional experts and instilling a total workflow perspective, but also keeps the employees actively engaged (Worley 2013). The horizontal nature of process-based structures requires significant cooperation; therefore, all employees must work together as a team to be successful. This all leads to an organization that is very customer oriented and capable of increasing productivity. Overall, the process-based structure is very adaptable to changing environments and quite responsive to customer needs (Hernaus 2008, Devaney 2014).

The horizontal approach to this structure lends itself to being adaptive, responsive and even efficient; however, there are some disadvantages that must be taken into account. In a pure process-based organization, the biggest problem management must handle is the crossing over of processes into other processes. Some crossing over or integration is necessary which is why process-based organizations must incorporate a method to manage it (in Figure 14, this would be the Centers of Excellence) (Worley 2013, Vanhaverbeke 1999, Sugiharto 2009). In addition, horizontal process groupings often have organizational barriers that can impede communication and transfer of work. Once again, process-based organizations must address this issue as well (in Figure 14, this would be the Process Council) (Devaney 2014). Furthermore, with this construct based on end-to-end process ownership, managers must ensure their processes are the right ones for the job. An inadequate process will affect the outcome down the line within other process groupings, thereby negatively affecting the company (Worley 2013).

Holacractic Structure

The holacratic structure is a relatively new construct emerging within the last decade. Drawing on self-management concepts from software development corporations during the 1990s, the holacratic structure represents a clean break from traditional hierarchal structures. The term holarchy, is equated to separate entities that function together as one unit. Hence, as Figure 15 illustrates, an organizational chart that shares no similarities with the other structures discussed in this paper (Feloni 2015). In lieu of formal vertical chains of authority, employees fall into any one of several organizational circles depending on the workload at any given time. Figure 15 provides a basic understanding of the work circles, but in actuality, companies will use many more. For

example, the Amazon-owned, online retail store Zappos© was expected to have nearly 400 circles by the end of its transition to the holacratic structure (Foster 2014).

The holacratic structure falls near the “flat” end of the organizational structure continuum represented in Figure 8, and as such is noted for extensive distribution of authority. Unlike vertical hierarchies, the preponderance of authority and decision-making responsibilities reside with the employees. In fact, even decisions typically made by managers such as hiring, firing, and spending are all done by committees. Individuals in leadership or management positions are responsible to communicate the company’s strategies, vision and goals, and to function as facilitators, which is crucial since holacratic organizations rely heavily on networking. Problems can be solved in a more effective manner when the right number of people, with the right skill sets are placed in a circle capitalizing on cross-functional advantages. Team circles and the roles personnel play in the circles are constantly being added, dissolved or changed based on current needs. This self-organizing, constant-evolving structure sounds chaotic, but holacratic organizations follow a comprehensive and clear set of rules governing how circles will be formed and operated. It is this high level of formalization that controls the chaos and allows the organization to function (Feloni 2015, Pisoni 2015, Bratton 2015).

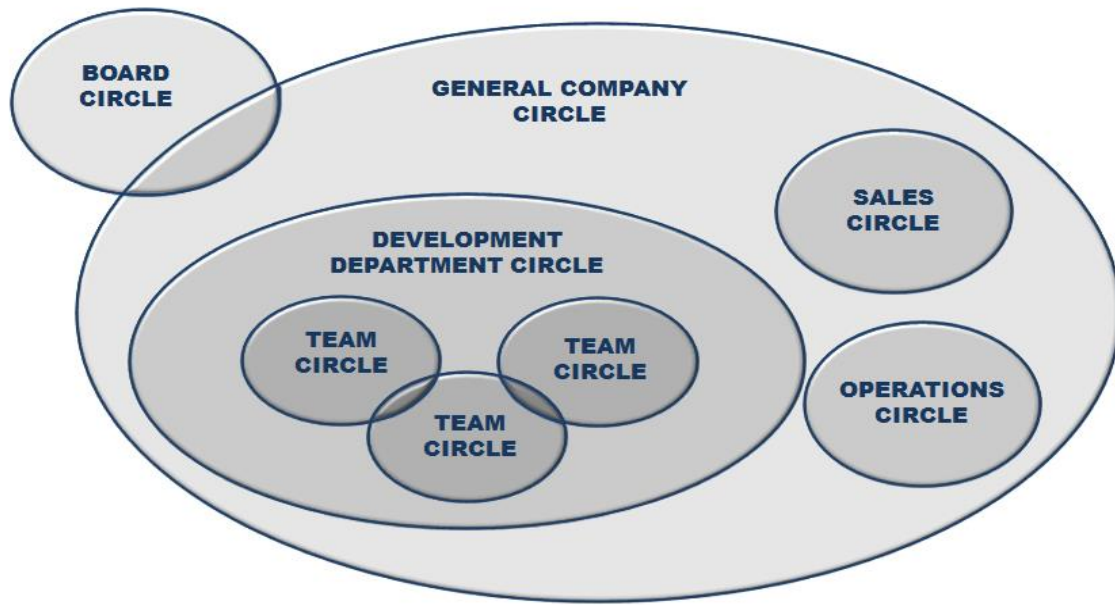


Figure 15. Notional Holacratic Structure

With the holacratic structure being an emerging structure, formal literature is scarce with regards to advantages and disadvantages based on any case studies. Most attention has been given to Zappos'© change to the holacratic structure two years ago. Currently, advantages being touted are attributed to breaking away from the rigidity of traditional hierarchies and moving towards a responsive and extremely flexible way of doing business (Pisoni 2015). The holacratic structure not only provides leaders the ability to rapidly change and integrate company resources to match changing environments and market needs, but also empowers employees through distributed authority, often resulting in better performance, creative thinking, and increased productivity (Bratton 2015). The business world is watching Zappos©, as the first large business to adopt the holacratic structure, to determine the sustainability of such a structure.

Although literature is relatively quiet so far on disadvantages, there are some key points to consider. Companies need to hire individuals that can work independently and can handle self-management structures. In general, people benefit from having authority figures for direction and being able to stay on schedule. Furthermore, with the removal of roles and titles from the employees, and instituting committees for decision-making instead of single managers, holacratic organizations may run into personnel problems. It is foreseeable that employee turn-over could be high if they are not provided incentives. Holacratic structures lack a clear corporate ladder and the better positions or titles which usually encompass promotions or monetary benefits. Finally, transitioning to a holacratic organization carries big risk. It may be useful in starting a business or trying to jumpstart a stagnant business; however, until case studies and more research is devoted to the emerging structure, success will remain uncertain (Zywein 2014).

Summary

The organizational structure for any business is more than just the famed organizational chart. This chart is the formal representation of many decisions made by senior management pertaining to design parameters. Eight parameters come together to shape an organization's formal structure that dictates workflow and coordination. Organizations are also influenced by external factors. However, all aspects of an organization, whether formal or informal, all have their place in one or more of five elements forming the strategic level organizational design common to all organizations, regardless of age or size. Based on decisions made with regards to design parameters, many different organizational structures have been developed and implemented. Some

constructs are traditional structures dating back hundreds of years; however, with technological advancements and changing business environments, several emerging constructs are growing in popularity. This study discussed a few structures that are most likely to be used by industrial or commercial organizations today. In the next chapter, a case study of the AFNE is presented in an effort to characterize the AFNE as an organization and to present models for comparison between the AFNE model and those of commercial/industrial business models.

III. Methodology

Chapter Overview

This study uses a qualitative research methodology capitalizing on a case study as the primary strategy. The design of the research is based on the literature review's discussion on organizational design parameters and organization structures. The case study research consists of two main focus points. The first focal point conducts research into existing Air Force regulatory guidance and experiential interaction with units within the AFNE to obtain data necessary to characterize the AFNE in terms of an organizational structure. The second focal point, and primary content of this chapter, consists of a survey designed to garner senior leader perspective on the characteristics of the AFNE as an organization and to obtain senior leader perspective on where the AFNE should be as an organization.

Case Study Overview

The Cold War ended in 1991, and in the years to follow, the focus on the nuclear mission began to deteriorate. Within a decade, organizational oversight diminished, nuclear weapons expertise waned, support functions were reduced, and infrastructure was being severely degraded. The nuclear enterprise soon found itself falling behind in every area of responsibility, and the Air Force was contributing to this phenomenon (Murdock 2008). A few years later, the lack of focus would manifest itself in the form of procedural breakdowns involving nuclear weapons or components. These events (i.e. flying nuclear weapons from Minot AFB, ND, to Barksdale AFB, LA, as well as the shipment of warhead fuzes to Taiwan), highlighted the need to re-invigorate the nuclear

enterprise. Several significant organizational changes were implemented following investigations and enterprise reviews; however, current leadership is calling for more organizational changes to improve the effectiveness of the AFNE (Fanning 2013).

Although the organizational changes in the Air Force were done to bring about renewed emphasis and advocacy for the AFNE, the additions or deletions were individual in nature and not viewed as an AFNE organizational structure modification. This could be the case because the AFNE has not been characterized in terms of an organizational structure. This research begins the process of thinking about the AFNE as an organization with a related organizational structure. The first goal of the case study is to define what the actual AFNE looks like in terms of an organization. The second goal of the case study is to obtain senior leader perspective with regard to organizational design parameters that shape the organization and its structure. With information obtained, an organizational model of the AFNE can be produced and used in comparison with commercial and industrial business models to determine what organizational structure, or combination of structures can be recommended to improve the effectiveness of the AFNE.

Research Design

The research design of this study provides a description of the method in which case study data is obtained, the type of data the study solicits, and how the data is analyzed. The primary strategy of this case study is the usage of a cross-functional survey. Survey research is a valuable tool used to ask a given number of individuals a series of questions (opinion, attitude or experiential), with the goal of tabulating and

analyzing responses in order to infer characteristics of the case study topic. Survey research for this study is conducted using a questionnaire (Ormrod 2013).

Qualitative Research

Qualitative research can be accomplished through a variety of methods; however, all methods accomplish the same result of focusing on phenomena of complex situations in order to interpret or define aspects that are truly important (Ormrod 2013). In order to build a holistic picture of the topic of study, the exploratory and interpretive nature of qualitative research methods are heavily relied upon to effectively describe and explain the problem. For complex topics of study, it is not prudent to break down the entity into smaller digestible portions, but to represent the subject in its entirety in its natural setting. Thus, data collected would be from actual interactions and observations in lieu of synthesized laboratory experiments (Flick 2014).

The qualitative research method was selected, because the problem needed an in-depth look that could not be provided through a literature review. In fact, existing literature is rather silent with regards to this research topic. Available literature focuses on the organizational structure and alignment of the Air Force in general, but not for the AFNE as an organization. What existing literature does provide is valuable insight into the design parameters of commercial/industrial business models. This information provides a framework for which the AFNE can be studied. This study does not formulate a hypothesis, but qualitative research allows for this. Therefore, this study will not test formulas, or concepts that are already known or established. Instead, qualitative research was selected to pursue the goal of discovering new ideas that will require future research.

Case Study

Qualitative research has several popular methodologies. The primary methodology used in this study is the case study. The case study method was selected because of the ability of the method to accommodate a holistic study and to focus research on characteristics that could provide the most meaningful insight. Using a case study as a research method has been a very common choice when researching topics in the social, political or cultural setting; however, case studies do prove to be useful in areas such as economics and research into organizational structures (Yin 2009). Supporting the case study, is the utilization of an exploratory questionnaire. Using a questionnaire with the case study enables the ability to survey the AFNE with “how much”, “how many”, or “what kind” type questions that are necessary to collect and analyze data consistent with the needs of this study and to facilitate comparison.

This design of the case study takes into consideration the five components of a case study: the study’s questions, any propositions, the unit of analysis, logic linking the data to any propositions, and the criteria for interpreting the findings (Yin 2009). The study’s questions are outlined in Chapter 1 as the investigative questions. Details of the survey questions are discussed in the next major section. The proposition of this study asserts that the AFNE, being a governmental agency, still has commonalities with the commercial and industrial sector from which comparisons can be made. Exploratory questions provide a necessary framework for analyzing similarities and differences among a range of various organizational structures. The unit of analysis for this study is clearly defined as the AFNE as an organization, and as the topic of study, has been adequately described in Chapter 1 and in the case study overview section of this chapter.

Linking data to the study's proposition is accomplished in two methods. The first method is simply explanation building, in order to explain or describe what the AFNE looks like as an organization. The second method involves pattern matching. Data obtained from surveys will be aggregated and represented pictorially. For comparison sake, the information provided from the literature review allows the creation of pictorial representations of organizational structures discussed in Chapter 2. Once completed, the AFNE representation can be pattern-matched with the commercial/industrial representations for comparisons and conclusions. Finally, determining criteria for interpreting findings is typically an underdeveloped component in case studies (Yin 2009). The survey research portion of this study ultimately uses a numbered response for each survey question as the variables to be input into a framework analysis tool. The analysis will rely primarily on modal selection to determine the variable to be used, provided that the selection with the most responses is separated from the next closest response by at least four. Although the separation factor of four is an arbitrary number derived for the criteria used to interpret survey responses, the separation factor would guarantee a twenty percent difference between the first and second place choices (even in the event of a one-hundred percent response rate).

Data Collection

The goal of data collection for this study is to rely on more than one source of information. In doing so, the results will be much more credible as data not only becomes verifiable, but also potentially converged into facts (Yin 2009). To build the initial concept of what the AFNE's organizational structure would look like, this study will rely on sources such as regulatory documents, working archival records, personal

experience, individual Air Force organization's website, email correspondence, and presentations. To develop the characteristics associated with the newly constructed AFNE organizational structure, the primary collection means (and linchpin of this study) is the questionnaire.

Data Analysis

Data analysis will consist of two components. Content analysis will be conducted on the regulations, archival records, and other data collected to determine the applicability of individual organizations to the AFNE based on their mission and roles. In addition, survey responses designed to address investigative questions will be answered with the support of descriptive statistics and pictorial representations. Descriptive statistics will be used to analyze questionnaire responses. The results from the statistical analysis will subsequently be aggregated and displayed visually as a theoretical model. Similarly, information from literature review research, is used to create theoretical models of commercial/industrial business models for comparison with the AFNE. The resultant theoretical models and details of the descriptive statistical analysis are presented in Chapter 4.

Survey Development

This section provides an overview of the questionnaire designed for the study. In addition to a synopsis of the line of questioning and available responses in the questionnaire, this section discusses how the application of the responses will be aggregated into a theoretical model for analysis. The entire questionnaire as it was administered can be found in Appendix B.

Design

The questionnaire developed to gather data pertaining to design parameters of the AFNE organization is a cross-functional electronic questionnaire consisting of seven pages. The first page is an informational page providing individuals selected to participate in the survey with 1) purpose of the survey; 2) participation statements; and 3) a confidentiality statement. The questionnaire will not ask for demographical information due to the irrelevancy of that information to the questions being asked and the fact the number of individuals requested to participate is relatively small.

The remaining pages consist of the actual survey questions. Survey questions are divided into ten different sections and are constructed to answer questions pertaining to seven organizational design parameters. Three of the design parameters have two variations, which accounts for the ten different sections. Each section incorporates an additional remarks section for respondents to clarify or expound on any response provided, as well as a larger remarks section to allow respondents to offer additional opinions or attitudes. The questions are designed to independently characterize each organizational design parameter; therefore, each section consists of a specific set of responses. Response sets range from four to six responses based on the complexity of the design parameter in question. Numbers assigned to the responses are not emplaced to represent scaling, but to indicate a position in a resultant theoretical model.

Theoretical Models

Characteristics of various organizational structures are used to craft the survey responses. These responses, which provide the basis for developing theoretical models, capture senior leader perspectives on formalization, liaisons, supervision, authority, labor,

training, and organizational alignment. To develop the theoretical models, Microsoft Excel© was used to create a tool called the Organizational Framework Generator (OFG) to provide standardized graphical outputs for analysis. The basis for using a graphical representation for comparison, stems from organizational theory illustrations of Richard Daft. When comparing differing characteristics (e.g. formalization, centralization, specialization, etc.) for three separate companies, he used bar graphs to display the varying levels that each company exhibited for each of the specific characteristics. With three bar graphs (each graph representing one company) aligned side by side, one could easily compare and contrast the three companies (Daft 2013). The OFG built on that precedence, but was modified to meet the needs of this study. The OFG contains data entry fields in which a numerical value (1 – 6 for this survey) are entered. Upon data entry, the OFG applies the numerical variable to what Microsoft Office© products refer to as a “Radar” chart. Figure 16 illustrates how the senior leader perspectives will be aggregated and modeled to present a picture of the AFNE as an organization. When all design parameters have a numerical variable entered, the OFG presents the resultant patterns. Figure 17 shows a snapshot from that tool. To facilitate comparison with the commercial/industrial sector, numerical values for design parameters pertaining to the organizational structures discussed in Chapter 2 are also entered into the OFG and modeled.

Variables used for these organizational structures were based off research conducted for the literature review. For example, one chart developed by Mintzberg identifies a bureaucratic organization as being grouped as a functional organization (Mintzberg, 1979). That characterization correlated to the Response 1 (Grouped

Functionally) under the questionnaire's G1/2 section; therefore, the variable "1" was used for the Grouping design parameter of the bureaucratic organizational structure. Likewise, research on simple structures indicated that all decisions are generally made by the owner, seeing that simple organizations are generally very small businesses. This directly correlates to Response 1 (Completely centralized so that only the top Air Force official makes decisions) under the questionnaire's C1/2 section; therefore, the variable "1" was used for the Centralization design parameter of the simple organizational structure. Once the frameworks for the commercial/industrial models are generated, the current and proposed AFNE organizational frameworks will then be pattern-matched with the various theoretical models to determine if a match exists.

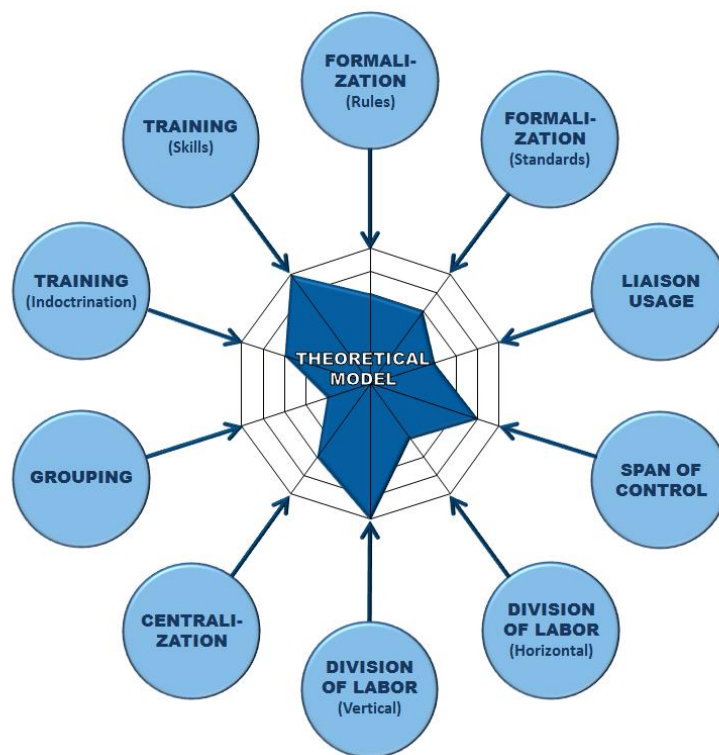


Figure 16. Theoretical Organizational Model

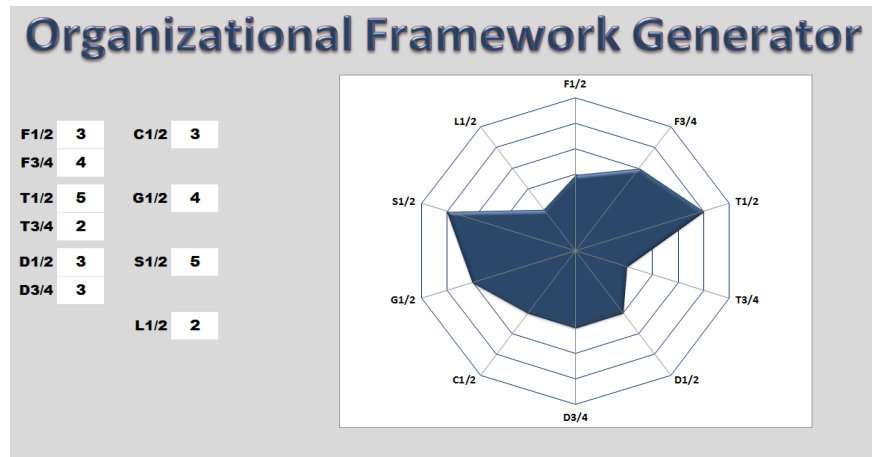


Figure 17. Organizational Framework Generator Snapshot

Participant Selection

This study targets senior leaders sitting in positions with significant roles within the AFNE. To maintain confidentiality, this paper will not provide specific names or offices. However, in general terms, senior leaders invited to participate in this study are subject matter experts from:

- 1) Headquarters Air Force. Air Staff and Special Staff leaders provide insight from the uppermost echelon of the Air Force.
- 2) United States Strategic Command. Senior Air Force leaders provide insight from the strategic viewpoint of the Air Force.
- 3) Major Commands. Directorate level leadership from six MAJCOMs provide insight from the Organize, Train and Equip (OT&E) perspective.
- 4) Numbered Air Forces. Senior leaders from Twentieth Air Force and Eighth Air Force provide perspective from the operational level.
- 5) Air Force Centers. Senior leaders from AFNWC and Air Force Security Forces Center (AFSFC) provide acquisition, program management and security expertise to this study.

Furthermore, this study also requires that the individuals in those positions or offices be at least the rank of Colonel or higher. This requirement is instituted to ensure the greatest

probability that the respondent would have experience and understanding in the realm of organizational design theory as well as the AFNE. The individuals are informed that they were selected based on their knowledge and role within the AFNE; however, they are also informed that their participation is voluntary.

Pre-test

As an essential step in survey research, a pre-test of the survey was conducted to ensure each question would be clearly understood, free from administrative errors, and was specific in its intent and focus (Singh 2007). Five individuals were selected to review the survey and were asked for feedback with regards to improvements, clarifications, or general errors. The five respondents were all Majors in the United States Air Force with experience in the AFNE. All five individuals that were asked to review the survey responded for a 100% response rate. Other than a couple minor grammatical errors, the majority of the feedback focused on clarifications within the design parameter lead-in definitions. The survey was edited to provide a higher quality product designed to maximize clarity and improve accuracy of responses. Only one round of pre-testing was conducted.

Institutional Approval

The Institutional Review Board (IRB) at the Air Force Institute of Technology (AFIT) granted approval for this study on 9 February 2016. A copy of the approval letter can be found in Appendix A. The survey was administered on 25 February 2016 and was sent to senior leaders as described in the “Participant Selection” paragraph.

Summary

This chapter outlined the research design, methodology and basis for selecting case study research as the strategy. This study uses a cross-functional case study supported by a questionnaire to obtain valuable qualitative data pertaining to the AFNE as an organization. Data obtained from the questionnaire and from observations will be placed in a theoretical framework for comparison with other business models. Chapter 4 will present the analysis and provide answers to this study's investigative questions.

IV. Analysis and Results

Chapter Overview

Analyzing qualitative research relies heavily on inductive reasoning and the application of specific meanings or categorization in order to draw conclusions. Although this limits objectivity, the analysis will often bring interesting insights to light that might have otherwise gone unnoticed (Ormrod 2013). Two phases of the methodology involved the collection of data necessary to visualize the AFNE in terms of an organizational structure and to collect survey research data to characterize the design parameters forming the AFNE organization. This chapter begins with a description of the data collected during the two phases previously outlined in Chapter 3, and is followed by a discussion of the results of the data collection as it relates to the five investigative questions posed by this research project.

Data Collection and Analysis

Data collection for this study began with a review of archival data, mission descriptions of numerous organizations as well as email correspondence. The AFNE is a complex enterprise; therefore, data collection could not be limited to a specific organization. Qualitative content analysis was conducted due to the inherent ability to analyze documents and search for underlying themes (Bryman 2004). Through content analysis, categories emerge from analyzed data in order to extract contextual meaning. Through a strategy of integrating different materials and evidence, regulatory documents, working archival records, personal experience, individual Air Force organization's website, email correspondence, and presentations were analyzed for applicability to the

AFNE and was utilized to answer Investigative Question 1 (Kohlbacher 2006).

Approximately three quarters of the data came from previous work that HAF/A10 had compiled listing units with a role in the AFNE. However, there were some gaps identified in the listing. To garner a more complete picture, mission descriptions from organizational websites were reviewed and direct email correspondence with various organizations was conducted to further identify units that play a role in the AFNE.

Data collection contributing to the remainder of the investigative questions, and primary focus of this study, was obtained through survey research executed through questionnaires. Analysis of survey responses was conducted based on simple descriptive statistics and survey participant comments. Survey results were tabulated to obtain modal selections and senior leader comments were used to support statistical analysis and to explain the complexity of the AFNE. Confidentiality was afforded to participants; therefore, no names or specific organizations are provided or cited in this study. A total of twenty surveys were distributed to senior Air Force leaders within the AFNE. The survey participants were given at least thirty days to complete the questionnaire with an official closing date of 31 March 2016. At the conclusion of the survey period, sixteen responses were received for an 80% response rate. Fourteen responses were from general officers in the rank of Brigadier General to Lieutenant General. In addition to survey response selections, participants were encouraged to provide additional comments, which will be highlighted later on in this study.

Results

Investigative Question 1

Investigative Question 1 was formulated to examine what constitutes the AFNE. An objective for this study sought the applicability of various organizational structures used in the commercial or industrial sector to the AFNE. However, in order to apply and compare constructs, the AFNE must be characterized in terms of an organizational structure. The challenge comes from the fact that the AFNE has not been thought of in this manner. Perhaps this is due to the inherent complexity resulting from nuclear enterprise organizations being convoluted throughout the United States Air Force as Figure 7 began to represent. Based on the data collected and analyzed with regards to the roles various organizations play with regard to the AFNE, an initial structure can be pieced together. Figure 18 represents what could possibly be the first detailed depiction of the AFNE organizational structure. There are a few points to consider when looking at the organizational structure. First, the chart primarily flows down to the wing level; however, if an organization below a wing level is truly a stand-alone unit, that squadron or group would be represented individually (e.g. 576 FLTS, 381 TRG, etc.). Secondly, in addition to the support Air Refueling Squadrons (ARS) provide to nuclear aircraft executing nuclear war orders, they do provide support for day-to-day operations, training, and exercises, warranting their inclusion. However, the Air Refueling Wings (ARW) are listed to represent the support requirements the ARS (single squadron or multiple squadrons) assigned to the wing. Finally, even though some MAJCOMs may only have a single unit associated with an AFNE responsibility (e.g. 55 WG), the appropriate NAF was listed to show the chain of command.

Investigative Question 2

Investigative Question 2 requested identification of the characteristics commercial and industrial organizational structures exhibit. The literature review discussed a continuum with regards to organizational structures. Managers must make decisions pertaining to organizational design parameters, which basically prescribes where the respective organization would fall on that continuum. Every structure not only fits somewhere along that continuum, but based on the design parameters, will also exhibit characteristics enabled by their place along that continuum. Tall organizational structures were found toward one end of the spectrum with the bureaucratic structure representing the extreme case. Functional and divisional structures also fall on the same end of the spectrum. What these three structures have in common is their exhibition of character traits associated with being operationally efficient. But efficiency is also dependent on matching the right structure with organizational operations. For example, as we saw with Microsoft®, functional structures are only efficient if the organization is built on few products or services, otherwise the organization should consider a divisional structure. On this end of the spectrum, organizational structures are not only characteristically efficient or mechanical, but are also characteristically simplistic. Taller structures are marked with layers of management and clear lines of authority consistent up and down the organizational structure providing uniformity throughout.

Moving away from the bureaucratic extreme end of the spectrum, organizational structures can be located at the opposite of extreme and characterized as a flat organization, or they will fall in the middle region taking on characteristics of both spectral ends. Flat organizations, with the holacratic structure representing the extreme

case, are very organic in design, and as such, are not known for being efficient or orderly. However, due to the decisions made with regard to design parameters, they typically exude characteristics of being very responsive and innovative. Unfortunately, organic organizations that are subjected to frequent change are typically complex. As Chapter 2 mentioned, most organizations will not sit on one extreme of the spectrum, but will be somewhere in the middle. Based on decisions with regard to design parameters, organizations subsequently take on certain character traits and thereby experience varying degrees of efficiency or responsiveness. In fact, in the middle region we see general characterizations in terms of being flexible or adaptable. Therefore, an organization may not be the most responsive like a holacratic structure, but it may be have some ability to adapt to changing environments within a reasonable amount of time, unlike bureaucratic structures that would take an enormous amount of effort to change the “machine”. Figure 19 provides an additional representation of the organizations and the characteristics they could exhibit based on organizational design parameter decisions.

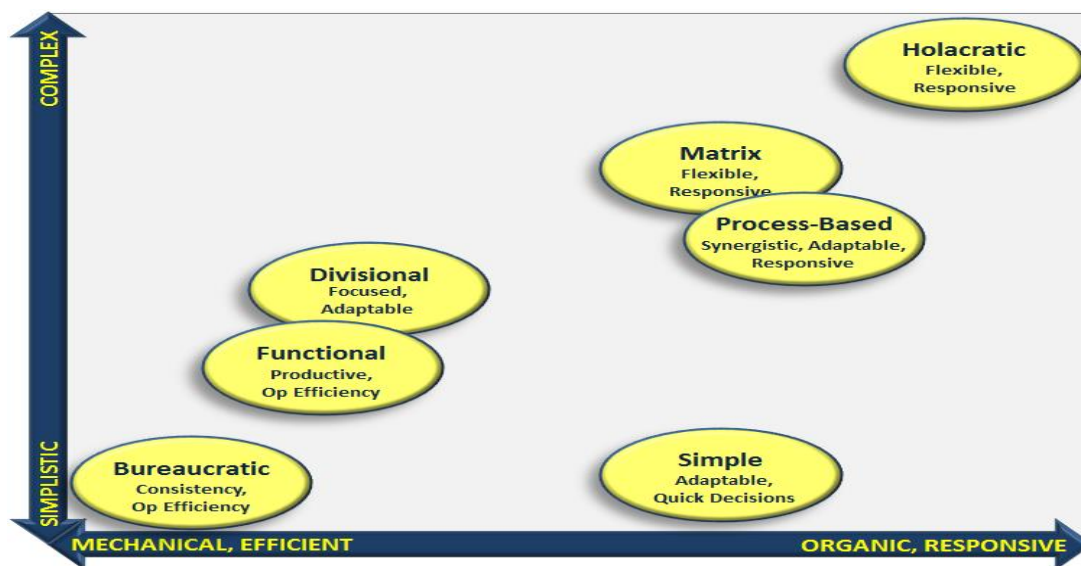


Figure 19. Organizational Characteristics

Investigative Question 3

Investigative Question 3 inquired about the extent to which Air Force senior leader perspectives are consistent with each other with regard to organizational design parameters of the AFNE. For each design parameter, senior leaders chose a response based on their perspective of the AFNE today, as well as where they believe the AFNE should be for greater effectiveness. The literature review chapter identified and discussed eight design parameters that contribute to the formation of an organization. Although all eight parameters play a role in organization design, only seven parameters were included in the actual survey. Three of the design parameters (Formalization, Division of Labor and Training) consisted of multiple facets. These parameters were each divided into two main subsets resulting in a total of ten questions for analysis. The parameter of “size” was not included because the Air Force could only be thought of as a large organization; therefore, the perspectives of senior leaders in this area would be irrelevant to this study. Senior leaders were given the opportunity to provide remarks for each response which greatly added to the qualitative nature of this study.

Formalization Parameter

Formalization consisted of two parts. In part one, survey participants responded to the question of the AFNE’s level of general administrative and procedural guidance (e.g. AFIs, Policy Memorandums, etc.). Figure 20 provides the breakout of responses based on the following available responses:

1. Minimal
2. Moderate
3. High
4. Don’t Know

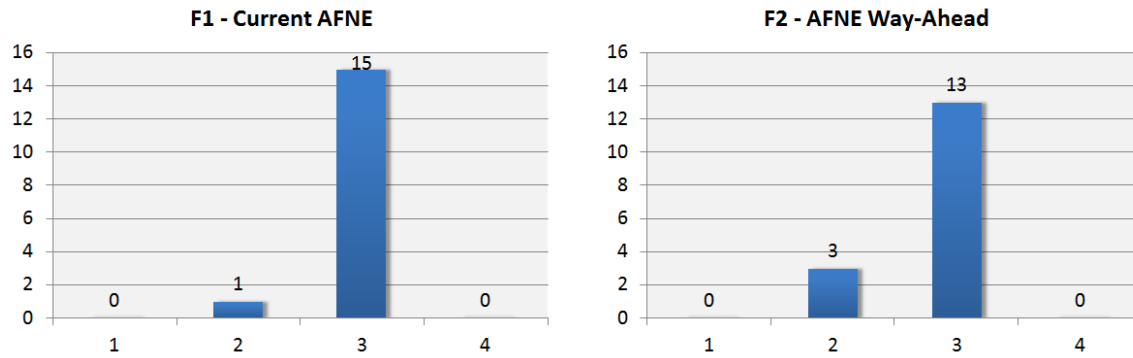


Figure 20. Formalization Part 1 Survey Results

Survey responses clearly indicate senior leaders recognize a high level of administrative and procedural guidance in the AFNE today, and believe the level should be high. Nuclear mishaps carry grave consequences; therefore, much of the AFNE business is compliance-based. Although the nature of nuclear operations requires detailed guidance and well-defined procedures, senior leaders express the need for balance. Guidance should be appropriate and directive when required, but the level of guidance should not be developed to a point where it verges on micromanagement or ties the hands of commanders. As one senior leader remarked:

“Be careful not to conflate the need for tight procedural rules or guidance with micromanagement to ensuring personnel follow those rules. You can have tight processes and procedures and still allow personnel to make decisions without overbearing management oversight.”

A high level of formalization is necessary for continued success, provided that the guidance is clear and of high quality. Policy makers must ensure that with substantial amounts of instructions, their guidance and directives do not conflict with themselves or with other regulations and procedures.

In part two, survey participants responded to the question of the AFNE’s level of standardization of processes, procedures and outputs (e.g. technical orders, checklists, standards, etc.). Figure 21 provides the breakout of responses based on the following available responses:

1. Minimal Throughout
2. Moderate Throughout
3. High Throughout
4. Low for Upper Management, but High for Lower Echelons
5. Moderate for Upper Management, but High for Lower Echelons
6. Don’t Know

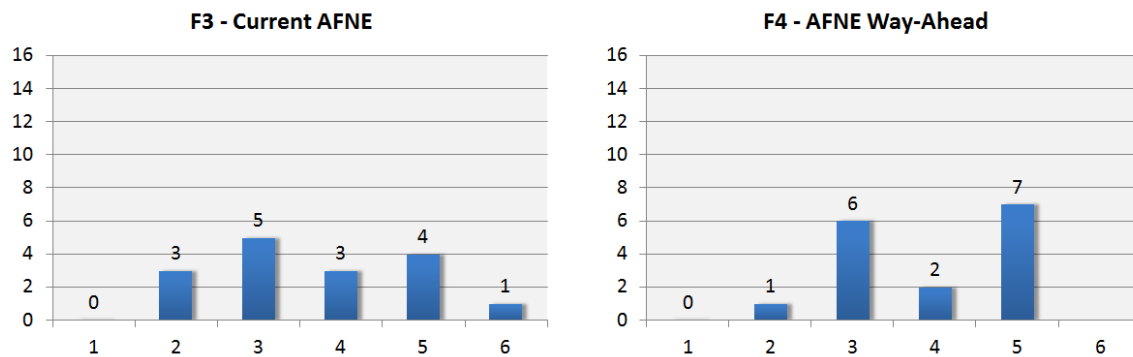


Figure 21. Formalization Part 2 Survey Results

Survey results reveal a lack of consensus among senior leader perspectives on the level of formalization in today’s AFNE with regard to standardization of processes, procedures and outputs. The lack of uniformity of responses is driven by observations of variances in operating practices among units, as stated by one respondent that:

“You can't lump process, procedure and output standardization together. You should want a standard output (e.g. "zero defects" or "no nuclear loss to terrorists"), but the geographic differences, size of unit differences, functional differences (e.g. bombers, DCA or ICBMs), would impel both the processes and the procedures to be different.”

Standardization is present due to technical orders and regulatory guidance; however, senior leaders are not in favor of the “county option”, which was prevalent within the ICBM community (i.e. Malmstrom Methods, Warren Way, Minot Methods).

Furthermore, a lack of standardization between MAJCOMs was noted.

The responses concerning the way-ahead for the AFNE were not as evenly spread, but a clear choice was still not achieved. A commonality between the top two choices indicated senior leaders believe a high level of standardization is warranted. The difference lies in whether standardization should be high throughout the AFNE, or high specifically among the lower echelons. High standardization would address variances among the operating/worker core. Consider the following comment from the surveys:

“The more tactical the process, the more detailed the guidance must become. Lower echelons operate with strict procedural or checklist processes driven by T.O.s or detailed manuals/policy/guidance/TTPs. Management is not executed with the same degree of specificity. In general, lower echelons must “do the thing right” and upper echelons are charged with “doing the right thing.”

Advocates for high standardization throughout the AFNE hold to the notion that the nuclear business must be without error. Particularly with management, standardization would have great impact on the effectiveness of sustainment and modernization programs, as well as improvements in oversight to prevent events such as those in 2008.

Division of Labor Parameter

Division of Labor also consisted of two parts. In part one, survey participants responded to the question of the AFNE’s level of horizontal specialization as determined by the number of jobs/tasks a single individual is responsible for.

Figure 22 provides the breakout of responses based on the following available responses:

1. Low
2. Moderate
3. High
4. Don't Know

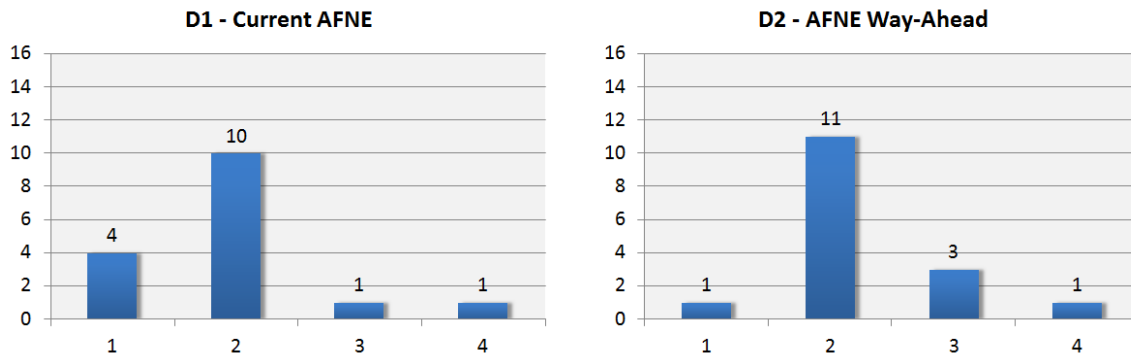


Figure 22. Division of Labor Part 1 Survey Results

Survey responses represent the opinions of senior leaders that a moderate level of horizontal specialization is present in the AFNE today, and should continue to be present. Unlike the commercial sector, trying to represent the AFNE as a specific level of horizontal specialization proved to be a challenge. Concerning the operating/worker core, there is a tendency to recognize a high level of horizontal specialization as Airmen work in their specialty. At the same time, many individuals in the lower echelons are responsible for multiple tasks. For example, ICBM operators are trained to operate the weapon system, but they are also required to coordinate or perform maintenance actions, direct or coordinate security issues, lead Missile Alert Facility (MAF) personnel from underground, and must be able to execute war orders. Likewise, bomber crews must fly the aircraft or operate equipment at their respective stations while also being prepared to execute war orders. Depending on the specialty, horizontal specialization will vary. Technical Non-Commissioned Officers (NCO) assigned to weapons maintenance will

naturally be highly specialized, whereas a National Airborne Operations Center (NAOC) officer will have many responsibilities and be less specialized.

Specialization in the AFNE varies in upper management, especially between career fields. Commanders in operational squadrons or groups are qualified in a weapon system and required to fly or perform nuclear alert duties, but they also have responsibilities to command and manage their respective organizations. Nuclear specialization for commanders in other career fields, such as security forces, will be greatly different. Although it is understood that Airmen at the lowest levels will be the most specialized, senior leaders relayed the point that nuclear expertise must be rebuilt which comes from building experience and knowledge across the spectrum of the AFNE, as one individual expressed:

“As leadership and management responsibility increase, authority and accountability increase commensurately. With this, there should be an expectation for an increase in breadth with less specialization, with a few exceptions for expertise in certain areas of science and engineering. The current level and expectation for “moderate” horizontal specialization is not unreasonable. However, career development within all nuclear enterprise career fields; officer, enlisted, civilian, operations, and acquisition/sustainment are critical to ensuring we develop and maintain the expertise where it is required and adjust as necessary as the nuclear enterprise evolves.”

In part two, survey participants responded to the question of the AFNE’s level of vertical specialization as determined by how far managers are removed from actually performing duties associated with the operator/working core.

Figure 23 provides the breakout of responses based on the following available responses:

1. Low
2. Moderate
3. High
4. Don't Know

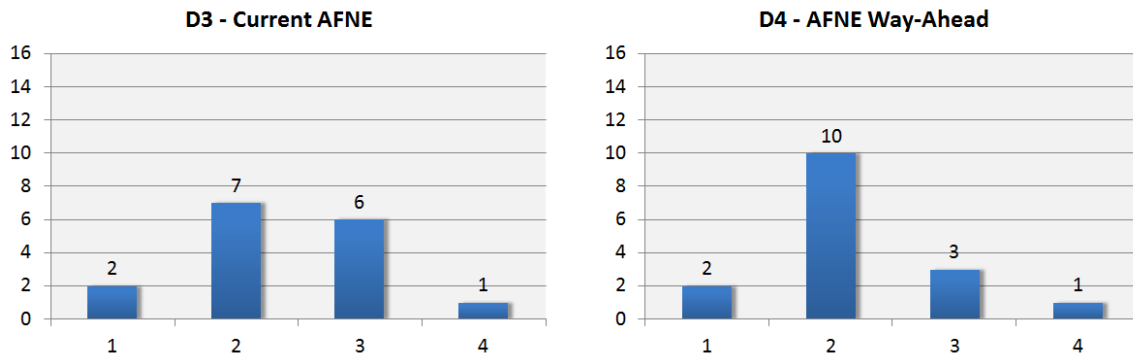


Figure 23. Division of Labor Part 2 Survey Results

Survey results reveal that the majority of senior leaders were split between a high and moderate level concerning the vertical specialization of today's AFNE. On the other hand, senior leaders were more in agreement that a moderate level of vertical specialization is where the AFNE should be. Similar to the discussion on horizontal specialization, the uniqueness of the AFNE provided difficulty selecting one choice. The level of specialization varies greatly by career fields. Management in all career fields must have a good understanding of what their subordinates do and how they do it; however, actually performing the duties is at the heart of vertical specialization. Management in support organizations typically are highly specialized (removed from performing operator/worker core duties). Contrary, many nuclear functional areas require mid-level and senior leaders to maintain proficiency and currency in the technical operations of their mission, such as the aforementioned ICBM and aviation commanders.

As one senior leader remarked:

“Expertise is required in highly specialized, consequential operations. As long as we undervalue experience and expertise, we will continue to suffer the consequences of people making decisions with an ounce of knowledge rather than a pound.”

Span of Control Parameter

Survey participants responded to the question of the AFNE’s span of control as determined by the number of individuals that report to a single manager. Figure 24 provides the breakout of responses based on the following available responses:

1. Narrow Throughout
2. Wide near top of the enterprise and narrows toward the bottom
3. Narrow near top of the enterprise and widens toward the bottom
4. Moderate Throughout
5. Wide Throughout
6. Don’t Know

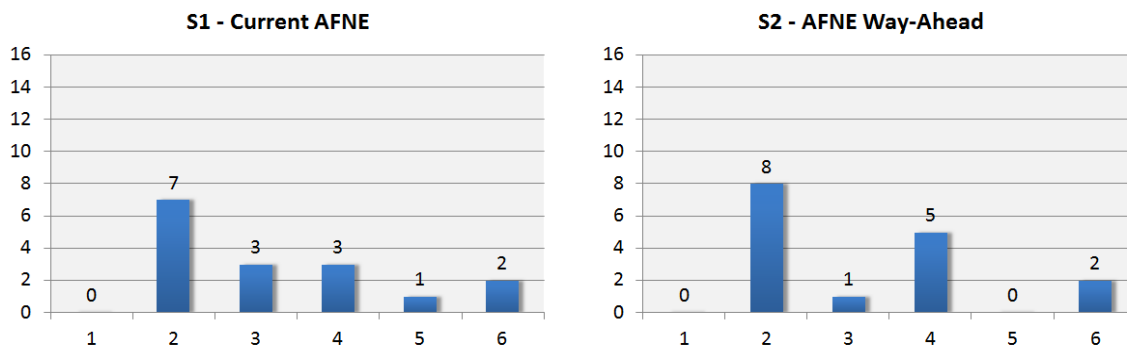


Figure 24. Span of Control Survey Results

Survey results reveal that nearly half of the respondents feel the span of control for today’s AFNE is wide near the top of the enterprise and narrows towards the bottom. Although one choice met the variable criteria outlined in the methodology section, difference in career fields seemed to be an underlying theme presenting difficulty with this survey question. One school of thought asserts that the Air Force is doing well in this area, with the span of control narrowing as it gets closer to the tactical level

(represented by an inverted pyramid structure). With this structure, leaders typically will have three to five subordinates. This seems to work for individuals in operational organizations, but not necessarily in maintenance, security or support units. Leaders in these organizations will have a wider span of control at lower levels. The other school of thought is that the span of control is excessively narrow at the bottom of operational organizations. One observation supporting this thought is the influx of leadership positions in missile squadrons. Because operators in this arena are not given many opportunities to grow as a leader until midway through their careers, leadership positions are often created to give individuals leadership experience. However, as indicated by one organizational chart, one squadron of approximately seventy five personnel had fifteen positions dedicated to various levels of leadership. The organizational structure for this squadron was very tall with narrow spans of control. Broader spans of control at lower echelons are actually more conducive to developing future nuclear enterprise leaders.

The responses concerning the way-ahead for the AFNE were not as evenly spread, but a clear choice was still not achieved. Senior leaders seem to be split over the inverted pyramid structure and having moderate spans of control throughout the AFNE. Senior leaders recognize that a “one-size-fits-all” approach will not work within the AFNE, but they also want to find the right balance. This will be as struggle since the demands and uniqueness of the various career fields within the AFNE required different leadership structures. This struggle is best stated by one respondent that:

“...too narrow span of control can lead to stovepipes, and too wide span of control can lead to too much decision making focused on one position.”

Liaison Usage Parameter

Survey participants responded to the question of the AFNE's usage of liaisons to interface with external organizations. Figure 25 provides the breakout of responses based on the following available responses:

1. Liaisons are not used at all
2. Uses few permanent liaison positions within the enterprise
3. Uses many permanent liaison positions within the enterprise
4. Uses temporary task forces to resolve issues/problems
5. Uses standing committees
6. Don't Know

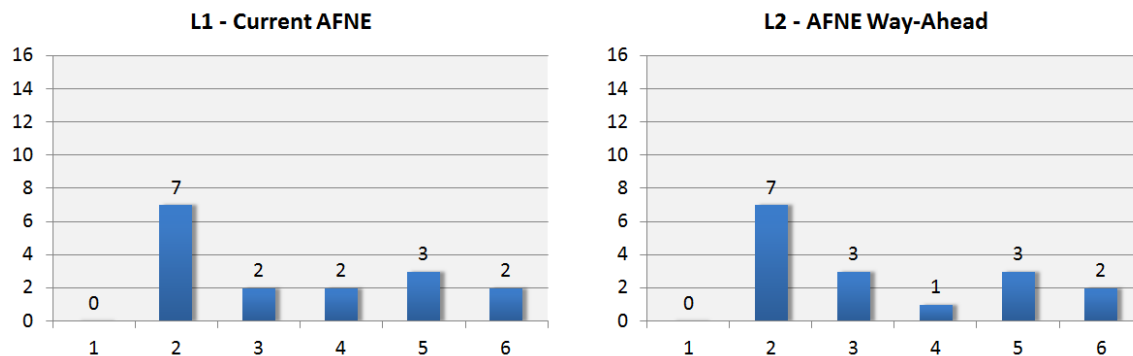


Figure 25. Liaison Usage Survey Results

Survey responses from senior leaders indicate that liaison usage within today's AFNE is primarily accomplished with a few permanent liaison positions within the AFNE. The same response was also indicated for the AFNE way-ahead. A few liaison positions with the AFNE are essential. For example, the conventional mission associated with the bombers requires effective communication and coordination with Air Combat Command (ACC). Likewise, effective communication and coordination is crucial between the MAJCOMs and the United States Strategic Command (USSTRATCOM). Furthermore, there has been a rise in the number of nuclear enterprise forums and

committees in response to various deficiencies; but their effectiveness is sometimes questioned. Survey responses indicated:

“These forums and committees have little to no authority as well as little to no recognition by the AF corporate process. We must transition from this type of approach to those that are better aligned to the responsibility, authority, and accountability of organizations/units within the nuclear enterprise.”

Keeping liaison usage to minimal numbers requires organizations to develop working relationships. Successful organizations have built healthy relationships and were able to reduce their reliance on liaisons. Daily interaction at the mission execution level is thought to provide a much more agile, rapid interface and problem resolution than attempting to accomplish the same level of support through periodic meetings that may or may not involve the right subject experts. Based on survey responses, senior leaders are not advocating for “many” liaison positions, but still value the positions and the advocacy they offer to external organizations.

Centralization Parameter

Survey participants responded to the question of the AFNE’s level of centralization or decentralization as determined by the degree decision making authority has been delegated to lower management levels. Figure 26 provides the breakout of responses based on the following available responses:

1. Completely centralized so that only the top Air Force official makes decisions
2. Centralized to upper management
3. Decentralized down to the appropriate level
4. Moderately to broadly decentralized horizontally
5. Completely decentralized so that the lower level workers make the decisions
6. Don’t Know

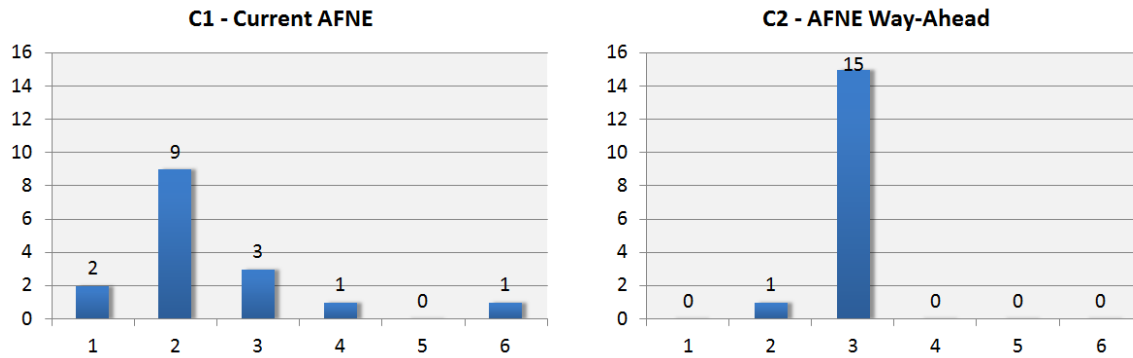


Figure 26. Centralization Survey Results

Survey results for the centralization parameter proved to be very interesting. Senior leader perspective indicated a majority felt that in today's AFNE, decisions are centralized to upper management. However, an almost unanimous consensus shows that senior leaders believe that decisions need to be decentralized down to the appropriate levels. The nuclear mission is under constant scrutiny and must be executed without error. For this reason, many decisions are often elevated up the decision chain and in some cases never delegated down to appropriate levels. Many senior leaders expressed this concern, as represented by one response:

“This is something we are working on constantly, to push the appropriate level of decision-making down to the lowest level possible. When dealing in the nuclear enterprise, people often elevate every issue up the chain for fear of making an incorrect decision with the nation's most valuable weapons.”

The ICBM community has been specifically identified as needing the most improvement. An often referenced example is the situation in which the Operations Group commander and in some cases the Missile Wing commander is having to make the decision on whether Missile Combat Crews (consisting of Lieutenants and Captains) can drive to or from their alert duty station during winter months. However, in the security forces world,

convoy commanders (Captains or below) are empowered to make instant decisions based on the fluid tactical situation involving off-base weapons movements.

Due to the critical nature of the nuclear mission, it is important to have a more senior decision-making model, but only where appropriate. Crew force errors in the past have generated unwanted higher headquarters (HHQ) and media attention. As a result, the crew force has been subjected to increased HHQ oversight and micromanagement. Recent efforts have addressed this, such as the Force Improvement Programs (FIP). The Air Force has been moving in the right direction, but leaders still recognize that more work still needs to be done. Shared sentiments of senior leaders can be summed up by one respondent's comment:

"This is one of the biggest areas for cultural change in the nuclear enterprise. The nuclear enterprise has got to grow a generation of leaders at all levels, NCO, CGO, and up who are empowered to make the appropriate level of decisions."

Training Parameter

Training consisted of two parts. In part one, survey participants responded to the question of the AFNE's level of skills training (formal or on the job) required to perform the job assigned. Figure 27 provides the breakout of responses based on the following available responses:

1. Receives no skills training
2. Receives minimal skills training
3. Receives moderate skills training
4. Receives extensive skills training
5. Don't Know

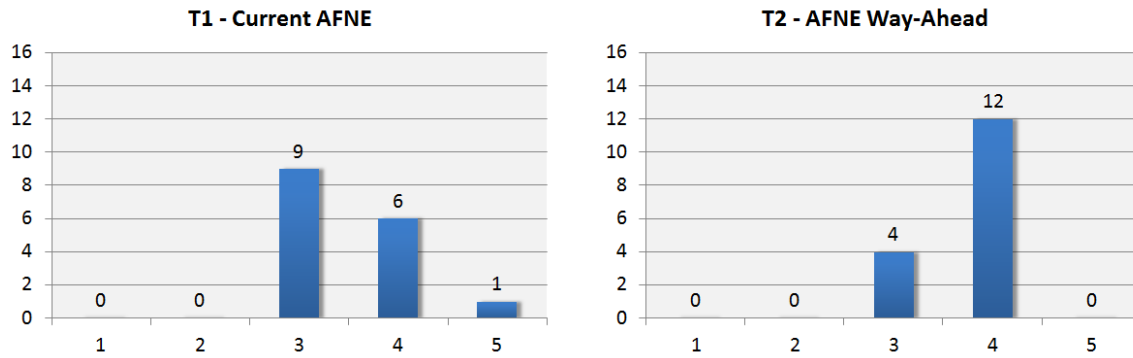


Figure 27. Training Part 1 Survey Results

Survey results pertaining to the level of skills training for today’s AFNE are split between moderate and extensive. While the initial skills training and formal upgrade training for bombers and ICBM crew members are seen as extensive and highly specialized, senior leaders feel training for security forces should be improved. Security forces personnel receive general security forces training, but minimal nuclear specialty training prior to arriving at their duty station. As discussed earlier, the nuclear mission is characterized by high expectations and prevention of errors and substantial consequences. For this reason, an extensive level of skills training and improved on-the-job training is desired for the AFNE. Improvements concerning recurring training programs were highlighted by senior leaders. FIP initiatives continue to move training programs in the right direction and they are an effective tool being used to raise the level of training. But it is not only necessary to move away from training that merely checks a box, but it is important to develop more effective and focused training. One survey response stated:

“We do a fairly good job at initial skill training and formal upgrade training. We could certainly improve our individual leadership and supervisor developmental training.”

In part two, survey participants responded to the question of the AFNE’s level of indoctrination training providing guidance on the enterprise itself in an effort to instill culture or vision. Figure 28 provides the breakout of responses based on the following available responses:

1. Receives no indoctrination training
2. Receives minimal indoctrination training
3. Receives moderate indoctrination training
4. Receives extensive indoctrination training
5. Don’t Know

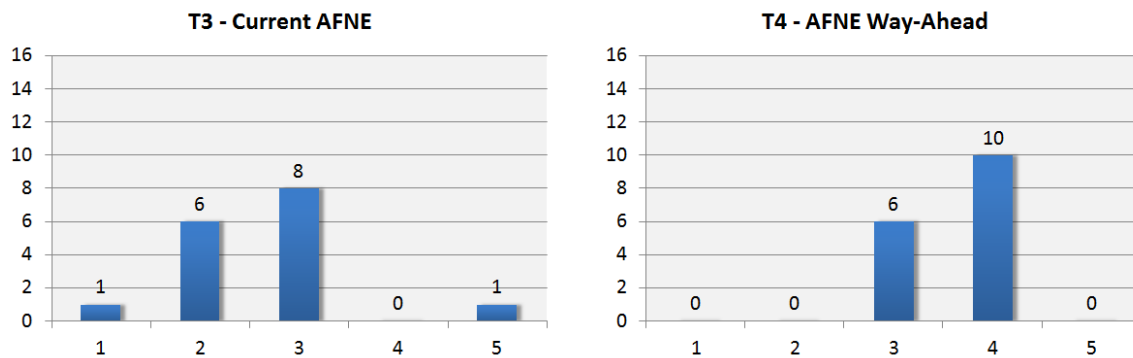


Figure 28. Training Part 2 Survey Results

Survey results for indoctrination training follow a similar pattern as indicated with skills training. There is a split between a low and moderate level of indoctrination training in today’s AFNE; however, the majority of senior leaders believe the level should be extensive. Indoctrination training is crucial to instill nuclear culture, vision, and strategy in today’s Airmen. Senior leaders recognize that the Air Force does well on technical training; however, this technical training is very much task-specific focused and does not necessarily explain the task in context of the nuclear enterprise and national security. As succinctly stated by one respondent:

“While training is very good, what is missing is education to all levels highlighting the value of the deterrent force.”

Indoctrination training must be incorporated in the development of Airmen from the moment they enter an organization and must continue throughout their careers. Senior leaders agree that the Air Force is making improvements in this area with numerous programs such as the nuclear fundamentals courses (Nuc 200/300/400), traveling deterrence symposiums and other educational programs, but they also feel more can be done. Specifically, more can be done in the way of opportunities. Hundreds of Airmen are on waiting lists to attend various courses due to class sizes, schedules, or funds. Increasing the opportunities for Airmen to attend these professional development courses was the biggest message from senior leaders that was garnered from the surveys.

Grouping Parameter

Survey participants responded to the question of the AFNE's grouping as determined by how it is aligned into smaller segments or departments. Figure 29 provides the breakout of responses based on the following available responses:

1. Grouped functionally
2. Grouped divisionally
3. Grouped functionally and divisionally in a matrix
4. Other (please explain in additional comments block)
5. Don't Know

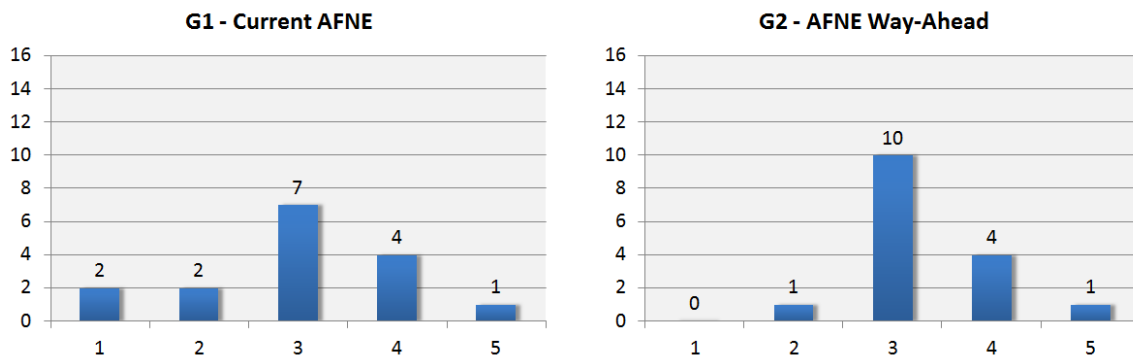


Figure 29. Grouping Survey Results

Survey results for the grouping parameter were intriguing. The results for the current AFNE did not result in a clear variable choice in accordance with methodology criteria. The modal choice among senior leaders indicated that the current AFNE was grouped functionally and divisionally in a matrix. AFI 38-101, *Air Force Organization*, dictates that organizational structuring principles that Air Force organizations will follow, includes the requirement to be functionally aligned (Jones 2011). There is a feeling among many senior leaders that the AFNE is fractured with many organizations having a piece of the AFNE responsibilities, but operating without clear lines of authority. This especially manifests itself with dual-use systems. With limited manning and resources, selective groupings or matrix-style coordination has been employed. Although the Air Force utilizes a formal organization structure, there is noticeably more reliance on working groups, High Performance Teams (HPT), or other similar groups to handle day-to-day challenges.

Survey results for the way-ahead indicate stronger support for a matrix organization structure for the AFNE. Four responses indicated that another structure was necessary, but the comments explaining the selection leaned towards the matrix structure as well because of the request for cross-functional organization. A matrix, dual-hatted, or other cross-functional alignment helps reduce the tendency for communities to remain tribally aligned (e.g. bomber community, ICBM community which can be further aligned into the Airborne Launch Control System (ALCS) and the Rapid Execution and Combat Targeting (REACT) specialties, etc.). Aligning functionally or divisionally can be efficient, but senior leaders feel that cross-functional alignment has advantages dealing

with challenges of large enterprise-oriented problems. One advocate for change commented:

“We have an opportunity to shape the organization to strengthen our culture and the processes that support it. But this is really about how best to group our people to unleash their individual and corporate productivity. It is my observation and sense that we can produce much more than we do the way we are currently organized.”

In addition to expressed opinions on cross-functional alignment, there were senior leaders that felt the AFNE should address the fractured nature of the enterprise. Besides HQ USAF and a few FOAs/DRUs reporting directly to HQ USAF or the CSAF, eight MAJCOMs have a role in the AFNE. However, some senior leader comments express concern over the minimal attention that some missions are given. Other concerns address the notion that required capabilities reside in multiple organizations leading to the aforementioned issue of clear lines of authority. While current processes have been made to work, synergistic benefits of appropriately consolidating functions under one chain of command could improve training processes, reaction times or mitigation efforts to national security threats and operations.

Investigative Question 4

Investigative Question 4 was derived to ascertain how effectively commercial or industrial organizations and the AFNE organization can be compared, with regard to design parameters. To compare the AFNE with other business models, this study utilized theoretical frameworks. Each design parameter would be assigned a variable based on research (for commercial/industrial models) or from survey results (for the current AFNE and the way-ahead). The methodology chapter stipulated criteria for variables obtained

from the survey results, in that for a variable to be used, it must be separated from the next closest selection by at least four. After reviewing the survey results, only five out of ten survey sections produced a clear selection. Figure 30, generated from the OFG, represents valid variables in blue and variables for which did not meet methodology criteria in red. The numbers in the red shaded areas depict the number of responses received for the respective survey choices. Figure 30 reveals that a complete framework for the current AFNE could not be generated; therefore, the current AFNE can't be effectively compared to commercial/industrial organizational structures.

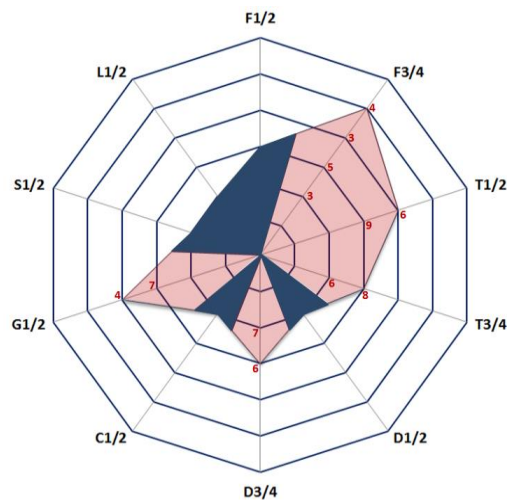


Figure 30. Current Air Force Nuclear Enterprise Organizational Framework

An organizational framework for the AFNE way-ahead was generated in the exact manner as for the current AFNE analysis. Survey results for the AFNE way-ahead produced a more complete framework. Only two (span of control and formalization pertaining to the standardization of processes, procedures and outputs) out of ten survey sections did not meet methodology criteria. Figure 31 illustrates the resultant organizational framework. With more than 75% of the framework represented by

variables meeting the methodology criteria, this AFNE way-ahead framework could be used in comparison with commercial/industrial models. With only two red-shaded variables (each split evenly between two survey choices), one can easily visualize the only four complete frameworks that could possibly be generated. As Figure 31 also depicts, one of the four possible frameworks could be generated using pure modal selections regardless of how separated they are from the next closest selection.

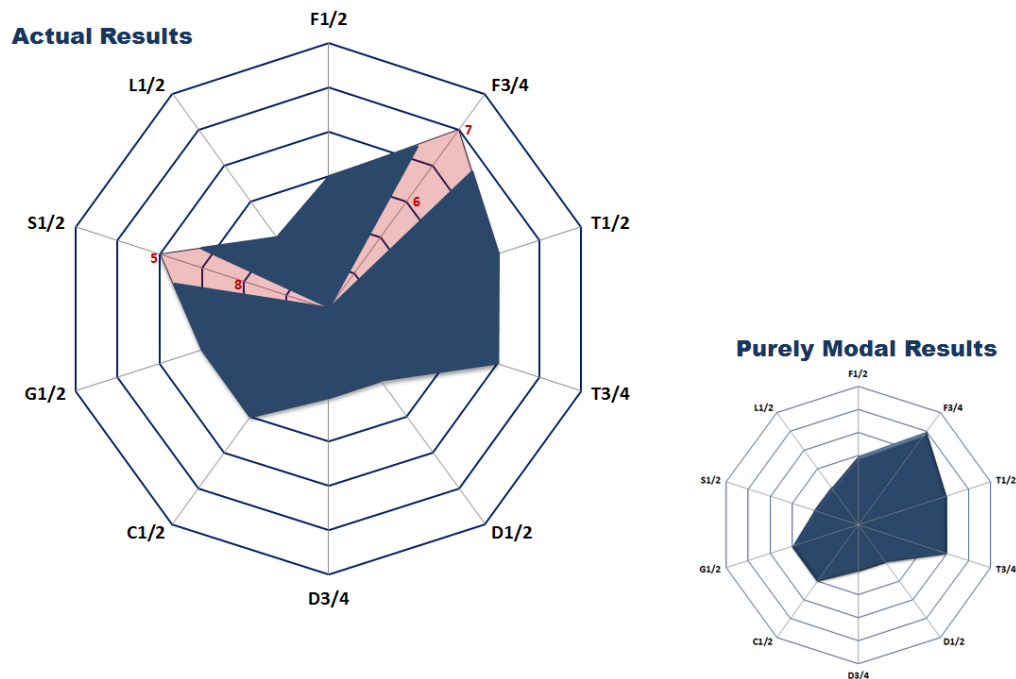
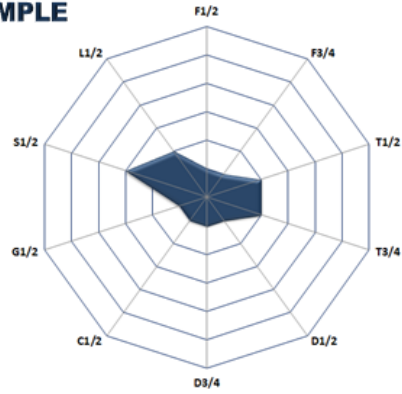


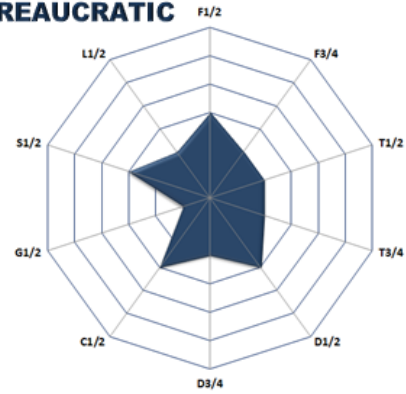
Figure 31. Organizational Framework for the Air Force Nuclear Enterprise Way-Ahead

Given the determination that one framework generated from the survey results could effectively be used in comparison, theoretical frameworks for the organizational structures discussed in the literature review needed to be developed. Figure 32 provides representations of the seven organizational structures and serves as a basis for analysis needed to answer Investigative Question 5.

SIMPLE



BUREAUCRATIC



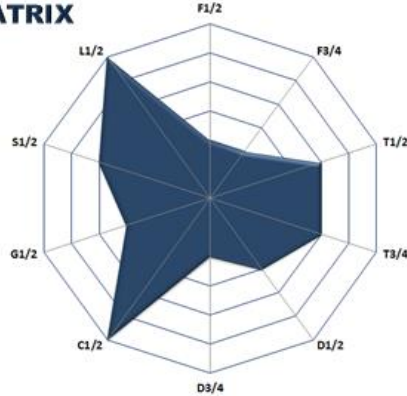
FUNCTIONAL



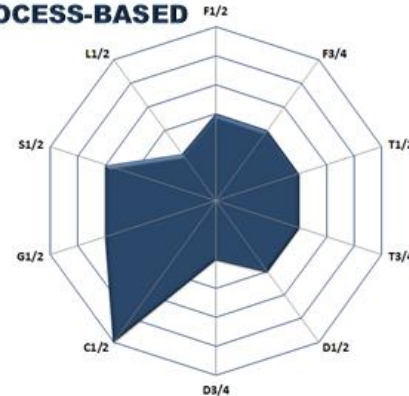
DIVISIONAL



MATRIX



PROCESS-BASED



HOLACRATIC

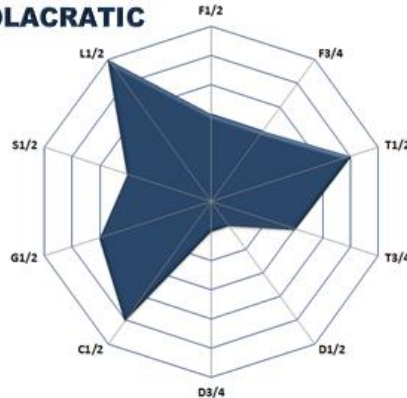


Figure 32. Theoretical Commercial/Industrial Organizational Frameworks

Investigative Question 5

Investigative Question 5 was formulated to determine which organizational structure(s) provide the best opportunity to improve the effectiveness of the AFNE. Senior leader perspectives garnered from the surveys were valuable to the efforts of this study to determine what the leadership believes organizational design characteristics of the AFNE should look like in order to increase the effectiveness of the enterprise. Ideally, the framework generated for the AFNE way-ahead could have been overlaid on the commercial/industrial frameworks to reveal a close match. Unfortunately, the analysis was not so cut and dry. Therefore, an analysis was conducted to find commonalities between the frameworks to identify what organizational structure(s) offer the greatest number of traits consistent with senior leader vision. Table 1 provides a listing of AFNE way-ahead survey results with a matching commercial/industrial model exhibiting the same response. After comparison, three business models were identified more than the others. The functional organizational structure was found to be in common with six of the ten survey responses. Matrix and process-based organizational structures were found to be in common with five of the ten survey responses. This highlights the notion that a formal organizational structure as directed in AFI 38-101 is necessary, but with the capability to incorporate cross-functional lines of authority aligned for specific challenges (such as major acquisition projects), in order to meet the needs of the Air Force and Combatant Commands more effectively.

Table 1. Organizational Framework Comparison

	Description	AFNE Survey Result	Corresponding Business Model(s)
F2	Formalization – general administrative and procedural rules or guidance (AFIs, PMs, etc.)	3 – High level	Bureaucratic Functional Process-Based Holacratic
F4*	Formalization – standardization of processes, procedures or outputs (TOs, checklists, etc.)	5 – Moderate for upper management; High for lower echelons	None
		3 – High throughout	Functional Process-Based Holacratic
T2	Training – skills training (formal or on-the-job)	4 – Extensive skills training	Matrix
T4	Training – indoctrination training	4 – Extensive indoctrination training	Matrix
D2	Division of Labor – horizontal specialization (number of jobs/tasks an individual is responsible for)	2 – Moderate level	Functional Divisional
D4	Division of Labor – vertical specialization (how far removed management is from performing “worker core” duties)	2 – Moderate level	Bureaucratic Functional Divisional Matrix Process-Based
C2	Centralization – degree to which decision making authority is delegated	3 – Decentralized down to appropriate level	Bureaucratic
G2	Grouping – how an organization is aligned into smaller segments/departments	3 – Grouped functionally and divisionally in a matrix	Matrix
S2*	Span of Control – number of personnel reporting directly to one individual	2 – Wide near top of the enterprise and narrows toward the bottom	Divisional Functional
		4 – Moderate throughout	Process-Based Matrix
L2	Liaison Usage – how an organization interfaces with an external organization	2 – Uses few permanent positions within the enterprise	Bureaucratic Simple Divisional Functional Process-Based
* Methodology criteria not met for this parameter; however, the top two survey responses were still compared to commercial/industrial models for commonalities.			

Summary

This chapter provided results and qualitative analysis of the five investigative questions identified in Chapter 1, following a brief description of the data collected. This chapter presented an initial layout of the AFNE in terms of an organizational structure, essentially answering Investigative Question 1. In addition, general characteristics of the seven organizational structures discussed in the literature review were also provided to officially answer Investigative Question 2. Senior leaders responding to a questionnaire used in the survey research portion of this study, provided a substantial amount of information supporting their respective responses. These comments were used to provide qualitative analysis of the current AFNE as well as the way-ahead for the AFNE. Descriptive statistics showed consensus and dissention among senior leader perspectives which addressed Investigative Question 3. Results from the survey research were consolidated and used to generate an organizational framework for the purposes of comparison with theoretical frameworks of the commercial/industrial business models. Analysis conducted for the framework comparison was used to answer Investigative Question 4 and 5.

V. Conclusions and Recommendations

Conclusions

The research and analysis of this study provided theoretical and qualitative insight that Air Force leaders could leverage when making organizational decisions. The objective of this study sought to assess the applicability of a number of organizational structures utilized by the commercial/industrial sector to the AFNE. The assessment provided a foundation to answer the overarching research question of this study which focused on the identification of a specific organizational structure used commercially or industrially (or combination of structures), that could be recommended to improve the effectiveness of the AFNE. Supporting the objective of this study were five interrelated investigative questions. Data obtained through basic research and survey research answered these questions and resulted in a framework for practical application.

To compare the AFNE with organizational structures, or discuss the AFNE in terms of an organization, it needs to be characterized as such. The research associated with this study backed up observations from reports such as the *Air Force Blue Ribbon Review of Nuclear Weapons Policies and Procedures* and the *Independent Review of the Department of Defense Nuclear Enterprise* that the AFNE is made up of loosely integrated, poorly integrated spectrum of responsibilities and activities. Senior leaders responding to the survey confirm that the AFNE is significantly fragmented without clear lines of authority. Another telling sign of the fragmentation was in the results of the survey research conducted to characterize the current AFNE with regards to organizational design parameters. With half of the design parameters failing to meet methodology criteria (and two of the remaining parameters only meeting minimum

criteria), the perspectives of senior leaders in various positions within the AFNE illustrated the difficulty in determining the organizational traits of the current AFNE. Survey responses pertaining to the way-ahead for the AFNE, resulted in a better consensus among senior leaders. A nearly complete organization framework was able to be generated from the results and effectively used to determine if one organizational structure, or a combination of structures would be best suited for the AFNE.

From the survey research obtained, and the literature review conducted, a single organizational structure could not be proven to be the best solution for the AFNE. Large commercial/industrial organizations aligned functionally or divisionally are structured in that fashion based on the products or services they are marketing. The business is essentially one business with unity of effort on their products or services, and consistency in management practices. In these cases, one organizational structure fits. The AFNE on the other hand is a conglomeration of many different organizations. Operations, maintenance, security and support specialties are common within each organization; however, it is not uncommon to find varying degrees of specialization, decentralization and other design parameters based on different requirements between these communities. Furthermore, organizations function differently based on where they are in the overall hierarchy of the AFNE. Although the same communities (e.g. operations, maintenance, etc.) are found at the Wing, NAF, MAJCOM and HAF levels, consistency within each design parameter is minimal at best. Consequently, the demands of the AFNE are not conducive to choosing a single organizational structure used by the commercial or industrial sector.

Although a single organizational structure could not be determined, survey results did highlight the notion that the way-ahead for the AFNE would benefit from a combination of a few different organizational structures. This study provided insight into the structure and function of the AFNE as it pertains to existing organizational theory and design research. The analysis validates and supplements a body of reviews and reports on the AFNE in that it provides character traits, advantages, and disadvantages of organizational structures for senior leaders to consider when making decisions involving organizational changes. A hybrid solution presents itself as a more feasible approach to increasing the effectiveness of the AFNE. A hybrid structure would involve the incorporation of specific aspects of more than one business model to achieve a desired solution. As Figure 33 illustrates, senior leaders must take certain steps (or incorporate certain business model characteristics) to move the enterprise in the direction it must go. To illustrate how the Air Force can move closer to a desired end state through meaningful organizational changes, consider present-day senior leaders expressing a desire for innovation and increased productivity in a fiscally constrained environment. Supporting this vision, the Air Force instituted the Make Every Dollar Count (MEDC) program as a means of addressing cost-cutting measures, organizational efficiencies, and best business practices. One initiative under this program is the Airmen Powered by Innovation (API), which encourages the submission of ideas to improve quality, production or processes while saving resources (AFPAO 2015). SECAF Deborah Lee James briefly mentioned one submission of centralizing aircraft engine repair Air Force wide (James 2014). By making this decision, numerous design parameters came into play. Increased level of standardization, higher level of vertical specialization due to organizational alignments,

and increased centralization of decision-making authority are examples of design parameters being influenced to move the aircraft engine repair community to a more efficient or mechanistic enterprise (character traits of functional, divisional or bureaucratic organizations).

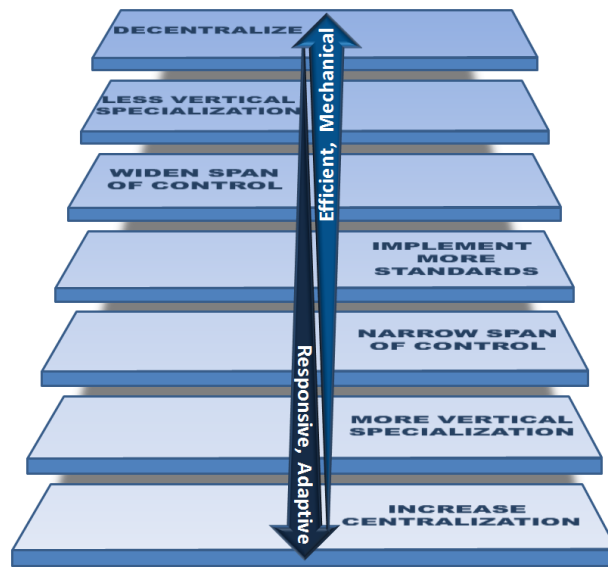


Figure 33. Taking Necessary Steps Toward End Result

Not only did the API example illustrate steps being taken by leadership to move an organization towards an organizational goal, but it also highlighted the fact that a single decision will affect multiple design parameters due to relational factors. Organizational design parameters can be evaluated individually (e.g. a unit executes a high level of skill training, supervisors have a wide span of control, etc), but should not be thought of as isolated from the others. For example, an organization may wish to decentralize authority down the chain of command. On the surface, this may appear to be a simple decision to delegate, but the level of decentralization (centralization parameter) is affected by how the organization is aligned (grouping parameter). Functional and

divisional alignment provides ample opportunities for decentralization, whereas bureaucracy tends to centralize authority to upper management. Furthermore, introduction of horizontal elements such as in a matrix alignment can greatly complicate decentralization due to multiple chains of command. As a result, decentralization must include aspects of standardization (formalization parameter), which is another fine example of interconnectivities associated with design parameters.

As discussed in Chapter 2, standardization is a powerful coordinating mechanism which reduces variability, increases predictability, establishes workflows, and contributes to the behavior of the organization (Mintzberg 1979). But standardization touches many aspects of organizational design. Standardization, foundational to the formalization parameter, is related to division of labor as vertical specialization requires additional standardization as hierarchies grow taller and managers are further removed from the worker/operator core. If an organization chooses to decentralize decisions down the chain, standardization is necessary to formalize decision authorities. The training parameter relies greatly on standardization, regardless of the administrative or highly technical aspect of the tasks being trained. Because of the relationships between the design parameters, leaders must be cognizant that decisions made with regards to one parameter may adversely affect another. In the case of our standardization example, with an organization experiencing a hierarchy growing taller, extensive standardization (from each management layer adding requirements) could appear as micromanagement; however, it may be a case of very precise rules instituted in attempt to eliminate all cases of ambiguity. Unfortunately, this often results in a lack of decision-making capability on the part of leaders that have had decision-making authority delegated to them. Therefore,

a balance must exist so operator/working cores can adequately function, and decision-makers can make decisions within their scope of responsibilities.

Recommendations

The research conducted for this study provides background for organizational change recommendations. The literature review revealed that all the design parameters work in concert to shape the organizational design and behavior of the AFNE. Although the main objective of this study was to determine a workable organizational structure for the AFNE, this study did provide the necessary framework or lens through which leaders must look when making organizational change decisions. Utilizing this framework and responses from senior leaders within the AFNE, this study is able to provide a few recommendations for consideration.

Status Quo

The AFNE is widely dispersed within the Air Force, and based on observations and personal communication with senior leaders, the Air Force intends on keeping that dynamic, in lieu of a more consolidated enterprise such as the United States Navy's Strategic Systems Program (SSP). Therefore, one recommendation is to forego any further major reorganization efforts and let the recent changes have an opportunity to mature and provide a baseline for assessing organizational effectiveness. Much needed organizational changes have been completed (e.g. creation of AFGSC, expansion and reorganization of AFNWC, etc.) to bring much needed attention and a concerted effort to move the AFNE in the right direction. For example, consolidating ICBMs and bomber aircraft under one MAJCOM has resulted in long overdue standardization

(“Formalization” parameter) among Mission Data Sets (MDS). The relatively recent implementation of AFGSC as a four-star command centralized authority for strategic nuclear forces under one commander (in lieu of two) with proper authority delegated to the commander (“Centralization” parameter). Likewise, the AFNWC commander has been dual-hatted with the assumption of Program Element Office (PEO) responsibilities, essentially consolidating acquisition, sustainment, and program offices under one commander.

Further support for maintaining status quo stems from a draft Program Action Directive (PAD) currently in coordination that will re-align/define roles and responsibilities for HAF, AFGSC, AFMC, and all Centers under AFMC. This PAD is believed to facilitate increased customer support to AFGSC and to enable a more responsive acquisition and sustainment process for the AFNE. Although the details of the PAD are still being discussed, the most current information indicates an innovative use of embedded personnel within various organizations, coupled with a relatively flat “work constellation.” This concept will keep traditional liaison positions to a minimum (as suggested in survey responses for the “Liaison Usage” parameter), but will enable responsiveness through an organic coordinating relationship.

Short-Term Recommendations

A research paper ending with a recommendation to take no action is not ideal; therefore, the remainder of this paper will provide a few recommendations based on the literature review and case study research conducted for this study. One such recommendation is to reduce the role of the “Liaison Usage” design parameter and better utilize the “Centralization” design parameter. Due to the dispersed nature of the AFNE,

numerous working groups, task forces and committees were, and are frequently established in response to real and perceived deficiencies during this past decade. As mentioned in Chapter 4, these forums have little to no authority. Furthermore, the forums feed the Air Force corporate process that unfortunately contributes to excessive oversight. AFNE organizations do employ permanent liaison positions; however, there is always the possibility that the owning organizations interests may not be adequately advocated for. As noted by one senior leader:

“Liaisons need to truly represent their owning organization and understand that organization’s issues. Most liaisons do not have that tie....they are often more representative of the location they are [at](went native).”

To reduce the role of liaisons, it is worth consideration to incorporate practices that the AFNWC has recently begun to adopt. They have established “embed” positions within air-delivered capabilities and nuclear command, control and communication (NC3) program offices to provide a consistent level of integration on a daily basis. The intent of the embed positions is not to just serve as an AFNWC liaison to program offices, but to serve as nuclear experts in respective program office teams.

By using embed positions, AFNE organizations could reduce reliance on traditional liaison positions and could benefit greatly from increased daily interaction and more efficient issue resolution. A point of frustration among some senior leaders is the fact that many issues never seem to obtain resolution (or adequate resolution) and are repeat discussion topics in the aforementioned forums. One response from the surveys validated this claim by stating:

“This daily interaction at the mission execution level will provide a much more agile and rapid interface than attempting to do this periodically through meetings or in reaction to actions that must be reversed or changed because adequate nuclear expertise was not engaged earlier.”

With a shift towards daily interaction as a driver to efficient issue resolution, it may be possible to reduce the enormity of current oversight. Forums should be limited to those which have had decision-making authority delegated. It may be possible to reduce oversight down to an authoritative brain trust of just a few pertinent players (e.g. AFGSC/CC, HAF/A10 Director, AFNWC/CC, etc). As this study has portrayed, organizational decisions affect multiple design parameters. Reducing oversight would have an impact on the “Formalization” parameter. Standardization levels would inevitably change as oversight levels change.

Another recommendation has its origins from senior leader responses to the survey highlighting the need for balanced standardization. Numerous MAJCOMs have responsibility for different missions within the AFNE; however, each MAJCOM may have unique methods for accomplishing it. As one senior leader commented:

“Within AFGSC, basic standardization occurs to some level within each functional community. This is driven by AFI/AFGSCI, but there is still a great deal of variance in program specifics between units that do the same thing. This is not always good. There is almost no standardization between MAJCOMs. Not sure how harmful this is or what benefits we are missing as a result.”

An example of differences between MAJCOMs is found with initial weapon system training. Aircrew assigned to AFGSC will attend Initial Qualification Training (IQT) for their weapon system at a Formal Training Unit (FTU) under AFGSC. B-52 crewmembers receive training at Barksdale AFB, LA while B-2 crewmembers receive

training at Whiteman AFB, MO. However, the IQT for ICBM crewmembers is conducted at Vandenberg AFB, CA under Air Education and Training Command (AETC). The ICBM and bomber communities fall under AFGSC authority, but are initially trained by two different MAJCOMs. Furthermore, ICBM training curriculum and requirements differ between AFGSC and AETC. Therefore, this study offers a recommendation to consider transferring ownership of the ICBM IQT from AETC to AFGSC. By doing this, AFGSC would have cradle-to-grave weapons system training responsibilities for all crewmembers under its command. This would not only increase standardized training for the ICBM community (“Formalization” parameter), but would also centralize authority for strategic weapon system training under one commander (“Centralization” parameter). Again, to highlight the interconnectedness of organizational design parameters, a change like this would affect the “Span of Control” parameters of the organizations. Likewise, this change could prompt reviews by the owning MAJCOM directorate and a decision on whether a functional or divisional alignment (“Grouping” parameter) is best for the directorate given added responsibilities.

Recommendation Requiring Future Research

Initiatives referenced within this study (FIP and API) have resulted in hundreds of recommendations that touch nearly every design parameter; however, these recommendations are primarily applicable at the tactical/operational level in lieu of the strategic/organizational level (James 2014, ICBM FIP 2014, Bomber FIP 2014). Survey research conducted for this study did not result in a clear determination of a single organizational structure that would be best suited for the AFNE based on the aggregated responses of senior leader perspectives pertaining to each design parameter.

However, survey responses with regard to the “Grouping” parameter, yielded a significant finding. Changes in force structure and recent budgetary constraints have either led to organizations working as a matrixed organization or contributed to survey respondents’ perception that the AFNE currently works in a matrix fashion. Moreover, nearly 70% of the responses indicated the way-ahead for the AFNE, requires it to be aligned in a matrix structure or similar concept. The notion of realigning to a matrix structure breaks away from the traditional functionally aligned directive found in AFI 38-101. Consider a few comments received from the survey research:

“The nuclear enterprise is fractured and largely, works via matrix and selective grouping.”

“We rely strongly on working groups, HPTs, etc., to handle day-to-day challenges. With less manning, this is necessary.”

“Overall, I think a matrix structure works best, either aligning by mission or by function ... doesn't matter, but there has to be a cross matrix function. We cross matrix today through weapon system teams.”

To address this finding, and the apparent call in favor of the matrix organizational structure, this study recognizes that an opportunity for future research should focus on the AFNE and the possibility of structuring it as a process-based organization. The process-based structure is relatively new to the business world, but has been touted as a good substitution for functionally aligned organizations (Hernaes 2008). The United States Navy’s SSP has been a source of conversation among senior leaders in the Air Force. Arguments do exist against moving towards an SSP structure; however, certain aspects of the SSP structure may need to be considered. As an example, the Director of Navy SSP holds this position for eight years and has an extensive background (by design) in the

Navy's nuclear systems, thereby reaping the benefits from greater continuity. When the Director makes a decision, second and third order effects of each decision are understood and often anticipated. Similarly, process-based structures are designed to provide senior managers with cradle-to-grave responsibilities for individual processes, and to be successful, managers are given authority over the processes.

As the Air Force continually seeks to operate more effectively and as senior leaders advocate for more responsiveness, the process-based organization appears to offer a solution that if incorporated within the AFNE (in certain functions, or to the AFNE in whole), could move the AFNE closer to end goals expressed by senior leaders in the Air Force and DoD. However, additional research is needed to fully understand this newer structure, re-organize existing organizations, formalize existing councils/HPTs/ working groups, analyze manpower/personnel ramifications, operational and day-to-day chain of command feasibility, and the impact of added or deleted units within the AFNE.

Additional research should seek to determine if the effort required to make drastic changes toward a process-based structure (or at least incorporate the structure for certain functional areas such as acquisition and sustainment) is worth the end product of an organization that eliminates bureaucracies, increases synergy, adapts well to changing environments, and responds quickly to customer needs (Devaney 2014, Hernaus 2008).

Studying the process-based organizational structure quickly brought to mind its potential applicability to the AFNE. While assigned to the Air Force Safety Center and involved with the nuclear certification process, advocacy was made for stronger horizontal processes. Advocacy for nuclear certification reform based on stronger horizontal processes, can be best illustrated using the ICBM nuclear certification process

as an example. Component replacement programs were completed engineered and turned over to the acquisition process to solicit formal Request for Proposals (RFP). However, contracts were often awarded and products designed before all nuclear certification plans and requirements were completed. In several cases, contracts potentially needed modification and manufactured designs were in jeopardy of having to be altered to account for certification requirements brought to light after contract award. Although the nuclear certification process does have horizontal aspects, manning to properly execute certification programs may have contributed to inefficiencies. A process-based structure would formally establish concrete horizontal processes with proper oversight and management (the process councils) to bring about efficiency in the AFNE.

Summary

This chapter provided conclusions based on a literature review of organizational theory and elements of organization design, as well as survey research conducted with AFNE senior leaders. Elements of organizational design can't be looked at in isolation, but needs to be analyzed holistically in order to account for second and third order effects that may manifest when making organizational changes. To apply the discussion topics of this study, a few recommendations were offered for consideration. A few recommendations are ones which could reasonably be acted upon in the short-term; however, one recommendation sets the stage for an opportunity for future research. Overall, this study provides a framework for reference to guide senior leaders in decision-making processes pertaining to organizational design and changes.

Appendix A. IRB Approval Letter



DEPARTMENT OF THE AIR FORCE
AIR FORCE INSTITUTE OF TECHNOLOGY
WRIGHT-PATTERSON AIR FORCE BASE OHIO

9 February 2016

MEMORANDUM FOR LT COL MATTHEW DOUGLAS

FROM: Jeffrey A. Ogden, Ph.D.
AFIT IRB Research Reviewer
2950 Hobson Way
Wright-Patterson AFB, OH 45433-7765

SUBJECT: Approval for exemption request from human experimentation requirements (32 CFR 219, DoDD 3216.2 and AFI 40-402) for Master of Operations Management Graduate Research Project

Your request was based on the Code of Federal Regulations, title 32, part 219, section 101, paragraph (b) (2) Research activities that involve the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior unless: (i) Information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and (ii) Any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation.

1. Your study qualifies for this exemption because you are not collecting and reporting sensitive data, which could reasonably damage the subjects' financial standing, employability, or reputation. Further, you are not collecting and reporting any demographic data which could realistically be expected to map a given response to a specific subject.
2. This determination pertains only to the Federal, Department of Defense, and Air Force regulations that govern the use of human subjects in research. Further, if a subject's future response reasonably places them at risk of criminal or civil liability or is damaging to their financial standing, employability, or reputation, you are required to file an adverse event report with this office immediately.

X

Jeffrey A. Ogden, Ph.D.
IRB Exempt Determination Official

Appendix B. Air Force Nuclear Enterprise Organization Evaluation

CONSENT TO PARTICIPATE IN QUESTIONNAIRE

AIR FORCE NUCLEAR ENTERPRISE ORGANIZATIONAL STRUCTURE

You have been asked to participate in a research study conducted by researchers from the Air Force Institute of Technology (AFIT), Graduate School of Engineering and Management, Department of Operational Sciences. The main objective of the project is to evaluate organizational design parameters as it relates to the Air Force Nuclear Enterprise as an organization. The results of this study will be included in a Graduate Research Project and briefing to the Air Force Global Strike Command leadership. You were selected as a participant in this study because of your knowledge and role within the Air Force Nuclear Enterprise. You should read the information below and ask questions about anything you do not understand before deciding whether or not to participate.

- This interview is voluntary. You have the right not to answer any question. I expect that the questionnaire will take approximately 30 minutes.
- You will not be compensated for this interview.
- The information you tell us will be kept confidential. All data will be presented at an aggregate level.
- This project will be completed by July 2016. All questionnaire documents will be stored in a secure work space until the project is completed. The documents will then be destroyed.

I understand the procedures described above. My questions have been answered to my satisfaction, and I agree to participate in this study. I have been given a copy of this form.

(Please initial)

[☐] I give permission for my questionnaire responses to be used in this study.

Name of Subject:

Signature of Subject Date

Signature of Investigator Date

Please contact Lt Col Douglas with any questions or concerns at matthew.douglas@afit.edu or 937-255-3636 x4740.

Formalization (part 1) refers to general administrative and procedural rules or guidance (e.g., AFIs, Policy Memorandums, etc). standardization of processes, procedures or outputs.						
F1	Based on expertise or observation, what level of general administrative and procedural rules or guidance does the Air Force Nuclear Enterprise operate under?					
	Minimal	Moderate	High	Don't Know		
	1. <input type="radio"/>	2. <input type="radio"/>	3. <input type="radio"/>	4. <input type="radio"/>		
F2	Based on expertise or observation, what level of general administrative and procedural rules or guidance should the Air Force Nuclear Enterprise employ to operate more effectively?					
	Minimal	Moderate	High	Don't Know		
	1. <input type="radio"/>	2. <input type="radio"/>	3. <input type="radio"/>	4. <input type="radio"/>		
Additional Comments related to Formalization						
Formalization (part 2) refers to standardization of processes, procedures or outputs (technical orders, checklists, standards, etc).						
F3	Based on expertise or observation, what level of process, procedural or output standardization does the Air Force Nuclear Enterprise operate under?					
	Minimal Throughout	Moderate Throughout	High Throughout	Low for Upper Management, but High For Lower Echelons	Moderate for Upper Management, but High For Lower Echelons	Don't Know
	1. <input type="radio"/>	2. <input type="radio"/>	3. <input type="radio"/>	4. <input type="radio"/>	5. <input type="radio"/>	6. <input type="radio"/>
F4	Based on expertise or observation, what level of process, procedural or output standardization should the Air Force Nuclear Enterprise employ to operate more effectively?					
	Minimal Throughout	Moderate Throughout	High Throughout	Low for Upper Management, but High For Lower Echelons	Moderate for Upper Management, but High For Lower Echelons	Don't Know
	1. <input type="radio"/>	2. <input type="radio"/>	3. <input type="radio"/>	4. <input type="radio"/>	5. <input type="radio"/>	6. <input type="radio"/>
Additional Comments related to Formalization						

Division of Labor (part 1) refers to the horizontal specialization of jobs. Horizontal specialization is characterized by the number of jobs an individual has. High specialization refers to an individual having one specific task to perform, whereas low specialization refers to an individual having responsibility for multiple tasks.

D1	Based on expertise or observation, what level of horizontal specialization is present within middle to upper management positions of the Air Force Nuclear Enterprise?			
	Low	Moderate	High	Don't Know
	1. <input type="radio"/>	2. <input type="radio"/>	3. <input type="radio"/>	4. <input type="radio"/>
D2	Based on expertise or observation, what should the level of horizontal specialization within middle to upper management positions be for the Air Force Nuclear Enterprise to operate more effectively?			
	Low	Moderate	High	Don't Know
	1. <input type="radio"/>	2. <input type="radio"/>	3. <input type="radio"/>	4. <input type="radio"/>

Additional Comments related to Division of Labor

Division of Labor (part 2) refers to the vertical specialization of jobs. Vertical specialization is characterized by how far removed a manager is from actually performing duties considered "operating/worker core" duties. High specialization refers to the notion that managers do not perform any duties associated with the "operating/worker core", whereas low specialization means that a manager will also perform duties associated with the "operating/worker core" in addition to managerial responsibilities.

Note 1: Operating/worker core is meant to represent individuals that are executing the mission or support (e.g. operators, maintainers, supply, etc).

Note 2: Middle management can be thought of as SQ/CC or higher (and their equivalents in staff positions)

D3	Based on expertise or observation, what level of vertical specialization is present within "operating/worker core" of the Air Force Nuclear Enterprise?			
	Low	Moderate	High	Don't Know
	1. <input type="radio"/>	2. <input type="radio"/>	3. <input type="radio"/>	4. <input type="radio"/>
D4	Based on expertise or observation, what should the level of vertical specialization be within the "operating/worker core" of the Air Force Nuclear Enterprise to operate more effectively?			
	Low	Moderate	High	Don't Know
	1. <input type="radio"/>	2. <input type="radio"/>	3. <input type="radio"/>	4. <input type="radio"/>

Additional Comments related to Division of Labor

Span of Control refers to the number of personnel reporting to a single manager. A wide span of control means that a single individual directly supervises many individuals, whereas a narrow span of control means that an individual directly supervises a few individuals.

S1	Based on expertise or observation, what breadth characterizes the span of control in which the Air Force Nuclear Enterprise operates under?					
	Narrow Throughout	Wide near top of the enterprise and narrows toward the bottom	Narrow near top of the enterprise and widens toward the bottom	Moderate Throughout	Wide Throughout	Don't Know
	1. <input type="radio"/>	2. <input type="radio"/>	3. <input type="radio"/>	4. <input type="radio"/>	5. <input type="radio"/>	6. <input type="radio"/>
S2	Based on expertise or observation, what breadth should the span of control be within the Air Force Nuclear Enterprise for it to operate more effectively?					
	Narrow Throughout	Wide near top of the enterprise and narrows toward the bottom	Narrow near top of the enterprise and widens toward the bottom	Moderate Throughout	Wide Throughout	Don't Know
	1. <input type="radio"/>	2. <input type="radio"/>	3. <input type="radio"/>	4. <input type="radio"/>	5. <input type="radio"/>	6. <input type="radio"/>

Additional Comments related to Span of Control

Liaison Usage refers to how an organization interfaces with an external organization (Example: AFGSC/Det 1 located at HQ ACC to liaison bomber combat operations, or Nuclear Surety Working Groups).

L1	Based on expertise or observation, what best characterizes the liaison utilization within the Air Force Nuclear Enterprise?					
	Liaisons are not used at all	Uses few permanent liaison positions within the enterprise	Uses many permanent liaison positions within the enterprise	Uses temporary task forces to resolve issues / problems	Uses standing committees	Don't Know
	1. <input type="radio"/>	2. <input type="radio"/>	3. <input type="radio"/>	4. <input type="radio"/>	5. <input type="radio"/>	6. <input type="radio"/>
L2	Based on expertise or observation, how should the Air Force Nuclear Enterprise utilize liaisons to operate more effectively?					
	Do not use liaisons	Uses few permanent liaison positions within the enterprise	Uses many permanent liaison positions within the enterprise	Uses temporary task forces to resolve issues / problems	Uses standing committees	Don't Know
	1. <input type="radio"/>	2. <input type="radio"/>	3. <input type="radio"/>	4. <input type="radio"/>	5. <input type="radio"/>	6. <input type="radio"/>

Additional Comments related to Liaison Usage

Centralization refers to the degree that decision making authority is delegated to lower levels.						
C1	Based on expertise or observation, what best characterizes the degree to which decision-making authority is delegated within the Air Force Nuclear Enterprise?					
	Completely centralized so that only the top Air Force official makes decisions	Centralized to upper management	Decentralized down to the appropriate level	Moderately to broadly decentralized horizontally	Completely decentralized so that the lower level workers makes the decisions	Don't Know
	1. <input type="radio"/>	2. <input type="radio"/>	3. <input type="radio"/>	4. <input type="radio"/>	5. <input type="radio"/>	6. <input type="radio"/>
C2	Based on expertise or observation, what degree should decision-making authority be delegated for Air Force Nuclear Enterprise to operate more effectively?					
	Completely centralized so that only the top Air Force official makes decisions	Centralized to upper management	Decentralized down to the appropriate level	Moderately to broadly decentralized horizontally	Completely decentralized so that the lower level workers makes the decisions	Don't Know
	1. <input type="radio"/>	2. <input type="radio"/>	3. <input type="radio"/>	4. <input type="radio"/>	5. <input type="radio"/>	6. <input type="radio"/>
Additional Comments related to Centralization						
Training (part 1) refers to skills training (formal or on the job) required to perform the job assigned.						
T1	Based on expertise or observation, what level of skills training does the "operating/worker core" receive within the Air Force Nuclear Enterprise?					
	Receives no skills training	Receives minimal skills training	Receives moderate skills training	Receives extensive skills training	Don't Know	
	1. <input type="radio"/>	2. <input type="radio"/>	3. <input type="radio"/>	4. <input type="radio"/>	5. <input type="radio"/>	
T2	Based on expertise or observation, what level of skills training should the "operating/worker core" receive within the Air Force Nuclear Enterprise to operate more effectively?					
	Receive no skills training	Receive minimal skills training	Receive moderate skills training	Receive extensive skills training	Don't Know	
	1. <input type="radio"/>	2. <input type="radio"/>	3. <input type="radio"/>	4. <input type="radio"/>	5. <input type="radio"/>	
Additional Comments related to Training						

Training (part 2) refers indoctrination training providing guidance on the enterprise itself (typically done to instill culture, vision, etc).

T3	Based on expertise or observation, what level of indoctrination training does the "operating/worker core" receive within the Air Force Nuclear Enterprise?				
	Receives no indoctrination training	Receives minimal indoctrination training	Receives moderate indoctrination training	Receives extensive indoctrination training	Don't Know
	1. <input type="radio"/>	2. <input type="radio"/>	3. <input type="radio"/>	4. <input type="radio"/>	5. <input type="radio"/>
T4	Based on expertise or observation, what level of indoctrination training should the "operating/worker core" receive within the Air Force Nuclear Enterprise to operate more effectively?				
	Receive no indoctrination training	Receive minimal indoctrination training	Receive moderate indoctrination training	Receive extensive indoctrination training	Don't Know
	1. <input type="radio"/>	2. <input type="radio"/>	3. <input type="radio"/>	4. <input type="radio"/>	5. <input type="radio"/>

Additional Comments related to Training

Grouping refers to how an organization is aligned into smaller segments or departments.

G1	Based on expertise or observation, how is the Air Force Nuclear Enterprise aligned?				
	Grouped functionally	Grouped divisionally	Grouped functionally and divisionally in a matrix	Other (please explain in additional comments block)	Don't Know
	1. <input type="radio"/>	2. <input type="radio"/>	3. <input type="radio"/>	4. <input type="radio"/>	5. <input type="radio"/>
G2	Based on expertise or observation, how should the Air Force Nuclear Enterprise be aligned as to operate more effectively?				
	Grouped functionally	Grouped divisionally	Grouped functionally and divisionally in a matrix	Other (please explain in additional comments block)	Don't Know
	1. <input type="radio"/>	2. <input type="radio"/>	3. <input type="radio"/>	4. <input type="radio"/>	5. <input type="radio"/>

Additional Comments related to Grouping

Additional Comments

Appendix C. Graduate Research Project Storyboard



Bibliography

Acohido, Brett Molina and Byron. "Microsoft reshuffles company structure." *USA Today*. July 11, 2013. <http://www.usatoday.com/story/tech/2013/07/11/microsoft-restructuring/2508175/> (accessed December 7, 2015).

Ashe-Edmunds, Sam. "Simple Organizational Structure." *Chron.com*. 2015. <http://smallbusiness.chron.com/simple-organizational-structure-63451.html> (accessed December 3, 2015).

Bratton, John. *Introduction to Work and Organizational Behaviour, 3rd Ed.* New York, NY: Palgrave Macmillan of St Martin's Press LLC, 2015.

Bryman, Alan. *Social Research Methods, 2nd Ed.* New York, NY: Oxford University Press.

Business Dictionary. *BusinessDictionary.com*. 2015. <http://www.businessdictionary.com/definition/organizational-design.html> (accessed 11 2, 2015).

Creedon, Madelyn. *Summary of DoD Internal Nuclear Enterprise Review*. Statement of the Honorable Madelyn Creedon Co-Chair of the Department of Defense's Internal Nuclear Enterprise Review and Principal Deputy Administrator National Nuclear Security Administration U.S. Department of Energy on the Air Force and Navy Nuclear , Washington D.C.: Department of Defense, 2015.

Daft, Richard L. *Organization Theory & Design, ed 11e*. Mason, OH: South-Western, 2013.

Davoren, Julie. "Functional Structure Organization Strength & Weakness." *Chron.com*. 2015. <http://smallbusiness.chron.com/functional-structure-organization-strength-weakness-60111.html> (accessed December 3, 2015).

Devaney, Erik. "The Pros and Cons of 7 Popular Organizational Structures." *HubSpot*. December 24, 2014. <http://blog.hubspot.com/marketing/team-structure-diagrams> (accessed December 3, 2015).

Donley, Michael B. "Air Force Nuclear Enterprise." *Air Force policy Directive 13-5*. Washington D.C.: Air Force Departmental Publishing Office, July 6, 2011.

—. "Organization and Unit Designations." *Air Force Policy Directive 38-1*. Washington D.C.: Air Force Departmental Publishing Office, August 24, 2011.

- Durbin, Brent. "Matrix Organization." *Encyclopedia Britannica*. July 15, 2014.
<http://www.britannica.com/topic/matrix-organization> (accessed December 31, 2105).
- Ebert, Ronald. *Business Essentials 10th ed.* Upper Saddle River, New Jersey: Prentice Hall, 2013.
- Encyclopedia of Management. *Encyclopedia.com*. 2009.
http://www.encyclopedia.com/topic/Organizational_structure.aspx (accessed December 7, 2015).
- Fanning, Eric K., and General Mark A. Welsh III. *Flight Plan for the Air Force Nuclear Enterprise*. Flight Plan, Washington D.C.: Department of the Air Force, 2013.
- Feloni, Richard. "Inside Zappos CEO Tony Hsieh's radical management experiment that prompted 14% of employees to quit." *Business Insider*. May 16, 2015.
<http://www.businessinsider.com/tony-hsieh-zappos-holacracy-management-experiment-2015-5> (accessed December 22, 2015).
- FIP, AFGSC. *Bomber Force Improvement Program*. Bossier City: Air Force Global Strike Command, 2014.
- FIP, AFGSC. *ICBM Force Improvement Program*. Bossier City, LA: Air Force Global Strike Command, 2014.
- Flick, Uwe. *An Introduction to Qualitative Research*. London: Sage, 2014.
- Foster, Philip A. *The Open Organization: A New Era of Leadership and Organizational Development*. Burlington, VT: Gower Publishing Company, 2014.
- General Larry D. Welch (Ret) and Admiral John C. Harvery (Ret). *Independent Review of the Department of Defense Nuclear Enterprise*. Washington D.C.: Department of Defense, 2014.
- Gillikin, Jason. "Advantages & Disadvantages of Divisional Organizational Structure." *Chron.com*. 2015. <http://smallbusiness.chron.com/advantages-disadvantages-divisional-organizational-structure-611.html> (accessed December 3, 2015).
- Goldratt, Eliyahu M. *The Goal*. Great Barrington, MA: The North River Press Publishing Corporation, 2014.

- Gottlieb, Marvin R. *The Matrix Organization Reloaded*. Westport, CT: Praeger Publishers, 2007.
- Griffin, Dana. "Functional Organizational Structure Advantages." *Chron.com*. 2015. <http://smallbusiness.chron.com/functional-organizational-structure-advantages-3721.html> (accessed December 3, 2015).
- Hagel, Chuck. "Statement on the Nuclear Enterprise Review and Reforms." *Secretary of Defense Speech*. Washington D.C.: Department of Defense, November 14, 2014.
- Hernaus, Tomislav. "Process-Based Organization Design Model: Theoretical Review and Model Conceptualization." *University of Zagreb Faculty of Economics and Business Working Paper Series: Paper No. 08-06*. Zagreb, Croatia: University of Zagreb, 2008.
- Ingram, David. "What Are the Advantages and Disadvantages of a Bureaucratic." *Chron.com*. 2015. <http://smallbusiness.chron.com/advantages-disadvantages-bureaucratic-organization-structure-2761.html> (accessed December 3, 2015).
- ISO. "Engaging stakeholders for ISO national standards bodies." *International Organization for Standardization*. October 2010. <http://www.iso.org/sites/PEG/> (accessed November 30, 2015).
- James L. Gibson, John M. Ivancevich, James H. Donnelly, Robert Konopaske. *Organizations: Behavior, Structure, Processes, 14th ed*. New York: McGraw-Hill, 2012.
- James, SECAF Deborah L. *SECAF Memo to Airmen on Make Every Dollar Count*. Washington D.C., May 13, 2014.
- Johnson, Rose. "Advantages & Disadvantages of Matrix Organizational Structures." *Chron.com*. 2015. <http://smallbusiness.chron.com/advantages-disadvantages-matrix-organizational-structures-business-organizations-26350.html> (accessed December 4, 2015).
- Jones, Lt Gen Darrell D. "Air Force Organization." *Air Force Instruction 38-101*. Washington D.C.: Air Force Departmental Publishing Office, March 16, 2011.
- Kerzner, Harold. *Project Management: A Systems Approach to Planning, Scheduling, and Controlling, 10th ed*. Hoboken, NJ: John Wiley & Sons Inc, 2009.

- Kohlbacher, Florian. *The Use of Qualitative Content Analysis in Case Study Research*. Forum: Qualitative Social Research. January 2006, Vol 7, No. 1, Article 21. <http://www.qualitative-research.net/index.php/fqs/article/view/75/153>
- Mintzberg, Henry. "Organization Design: Fashion or Fit?" *Harvard Business Review*. January 1981. <https://hbr.org/1981/01/organization-design-fashion-or-fit> (accessed December 3, 2015).
- . *The Structuring of Organizations*. Englewood Cliffs: Prentice-Hall, Inc., 1979.
- Murdock, Clark A. *The Department of Defense and the Nuclear Mission in the 21st Century*. Washington D.C.: Center for Strategic and International Studies , 2008.
- Naoum, Shamil. *People & Organizational Management In Construction*. London: Thomas Telford Publishing, Thomas Telford Ltd, 2001.
- Office, Air Force Public Affairs. *Making every dollar count through Airmen Powered by Innovation*. August 18, 2015. <http://www.af.mil/News/ArticleDisplay/tabid/223/Article/613948/making-every-dollar-count-through-airmen-powered-by-innovation.aspx> (accessed April 7, 2016).
- Ormrod, Paul D. Leedy and Jeanne Ellis. *Practical Research: PLanning and Design, 11th ed*. Upper Saddle River, NJ: Pearson Education Inc., 2013.
- Peyer, Major General Polly A. *Air Force Blue Ribbon Review of Nuclear Weapons Policies and Procedures*. Washington D.C.: Department of the Air Force, 2008.
- Pisoni, Adam. "Here's Why You Should Care About Holacracy." *Fast Company*. May 6, 2015. <http://www.fastcompany.com/3045848/hit-the-ground-running/heres-why-you-should-care-about-holacracy> (accessed December 4, 2015).
- Schultz. (November 4, 2015).
- Secretary of the Air Force Public Affairs. *U.S. Air Force News*. July 14, 2014. <http://www.af.mil/News/ArticleDisplay/tabid/223/Article/486175/air-force-announces-changes-to-headquarters-organization.aspx> (accessed November 30, 2015).
- Singh, Kultar. *Quantitative Social Research Methods*. New Dehli: Sage Publications India Pvt Ltd, 2007.

- Stanton, Michael Hammer and Steven. "How Process Enterprises Really Work." *Harvard Business Review*, 1999: 1-10.
- Sugiharto, Totok. "Process-Based Organizations: Structure and Integration." *Jakarta Post*. February 18, 2009.
<http://www.thejakartapost.com/news/2009/02/18/processbased-organizations-structure-and-integration.html> (accessed January 7, 2016).
- Taylor, Major Terence G. *Innovative Business Strategies as a Method For Improving the National Security System*. Air Force Fellows Research Report, Montgomery, AL: Air Force Research Institute, 2011.
- Thompson, Ben. "Why Microsoft's Reorganization is a Bad Idea." *Stratechery.com*. July 12, 2013. <https://stratechery.com/2013/why-microsofts-reorganization-is-a-bad-idea/> (accessed December 6, 2015).
- Usmani, Fahad. "Types of Organization Structure." *PM Study Circle*. August 2012.
<http://pmstudycircle.com/2012/08/type-of-organization-structure/> (accessed December 3, 2015).
- . "What is a Functional Organization Structure?" *PM Study Circle*. August 2012.
<http://pmstudycircle.com/2012/08/what-is-a-functional-organization-structure/> (accessed December 3, 2015).
- Vanhaverbeke, Huun Torremans and Wim. "Organizational Structure In Process-Based Organizations." *Knowledge And Process Management*, March 1999: 1-21.
- Worley, Thomas G. Cummings and Christopher G. *Organization Development & Change, 10th ed*. United States: Cengage Learning, 2013.
- Yin, Robert K. *Case Study Research: Design and Methods, 4th ed*. London: Sage, 2009.
- Zywein, Josh. "Fad or Future: Should Your Growing Business Embrace Holacracy?" *Open view Labs*. January 24, 2014. <http://labs.openviewpartners.com/is-holacracy-right-for-your-small-business/> (accessed January 6, 2016).

Vita

Major Jeffery Blackrick is currently a student in the School of Advanced Nuclear Deterrence Studies (SANDS) at, Kirtland AFB, New Mexico. Major Blackrick enlisted in the Air Force in August 2002 as a Contracting Apprentice. He went on to receive his commission from the Air Force Officer Training School in February 2005. He has served as missile combat crew commander and missile combat crew evaluator commander. During this time Major Blackrick logged over 4,800 hours on nuclear alert duty for 50 Intercontinental Ballistic Missiles (ICBM). From there, he was selected for assignment to Air Force Global Strike Command (AFGSC). His evaluator expertise was critical in the development of the Standardization and Evaluation Branch and ultimately to AFGSC reaching Full Operational Capacity as the newest major command in 27 years. As Chief of ICBM Standardization and Evaluation, he overhauled ICBM training, evaluation and certification programs by integrating ICBM, bomber, helicopter and Air Force evaluation standards. The reinvigorated programs became the benchmark for other weapon systems such as the Airborne Launch Control System, providing first-ever major command level guidance for these operators. Culminating his time at AFGSC, Major Blackrick was selected to be an Executive Officer to the Director of Operations. He was responsible for managerial oversight and execution of all A3 internal and external taskings and was also responsible for providing assistance to the A3 staff in developing the directorate's mission, objectives and day-to-day operations. Continuing to build his nuclear expertise, Major Blackrick was assigned to the Air Force Safety Center where he served as the Program Manager for Ground-Launched Nuclear Weapon Systems and was responsible for managerial oversight and execution of all ICBM nuclear safety design certifications.

REPORT DOCUMENTATION PAGE				Form Approved OMB No. 074-0188	
<p>The public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of the collection of information, including suggestions for reducing this burden to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports (0704-0188), 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.</p> <p>PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ADDRESS.</p>					
1. REPORT DATE (DD-MM-YYYY) 15-09-2016		2. REPORT TYPE GRP		3. DATES COVERED (From – To) AUG 2015 – SEP 2016	
4. TITLE AND SUBTITLE Air Force Nuclear Enterprise Organization: A Case Study				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S) Blackrick, Jeffery M., Major, USAF				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAMES(S) AND ADDRESS(S) Air Force Institute of Technology Graduate School of Engineering and Management (AFIT/EN) 2950 Hobson Way, Building 640 WPAFB OH 45433-8865				8. PERFORMING ORGANIZATION REPORT NUMBER AFIT-ENS-MS-16-S-027	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) Intentionally Left Blank				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT Distribution Statement A. Approved For Public Release; Distribution Unlimited.					
13. SUPPLEMENTARY NOTES This material is declared a work of the U.S. Government and is not subject to copyright protection in the United States.					
14. ABSTRACT Significant organizational changes have recently occurred in the Air Force to bolster the Air Force Nuclear Enterprise (AFNE). Such changes include the standup of AFGSC, the HAF/A10 Directorate, and the re-organization of AFNWC. However, General Welsh (CSAF), Eric Fanning (2013 acting SECAF) and Chuck Hagel (2014 SECDEF) continued to demand further organizational changes. The problem is that the AFNE has not been characterized in terms of an organizational structure. Viewing the enterprise organizationally allows the application of organizational theory and commercial business models to effectively evaluate the enterprise and advocate for appropriate changes to improve the AFNE's performance. Literature review provides valuable insight into the organizational design parameters that shape organizational structures. To characterize the AFNE, senior leaders across NAFs, MAJCOMs and HAF were asked to complete a survey regarding design parameters as they pertain to the current and future AFNE. Results and case study data were analyzed, represented statistically, modeled, and compared with commercial business models. This study highlighted, that although much has been done to improve how the AFNE organizationally functions, the complexity of the AFNE due to its conglomeration of organizations, missions, authorities, and structures make effective comparison difficult. However, opportunities still exist for future meaningful changes.					
15. SUBJECT TERMS Organization, Structure, Nuclear Enterprise, Case Study					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT	b. ABSTRACT	c. THIS PAGE			Douglas, Matthew A., Lt Col, Ph.D. AFIT/ENS
U	U	U	UU	141	19b. TELEPHONE NUMBER (Include area code) (937) 255-3636, x 4740 (matthew.douglas@afit.edu)